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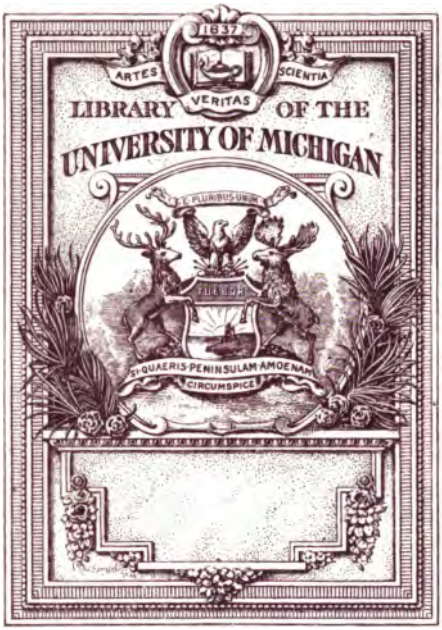

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TRANSACTIONS

OF THE

TEXAS STATE

Medical Association.

TWENTY-FIFTH ANNUAL SESSION

HELD AT

GALVESTON, TEXAS,

MAY 2, 3, 4 AND 5, 1893.

GALVESTON:
KNAPP BROS., PRINTERS AND PUBLISHERS.
1893.

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Minutes and discussions stenographically reported by Thos. Flavin, M. D., Galveston.

H. A. WEST, M. D., *Secretary*,
2213 Market Street,
Galveston, Texas.

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CONTENTS.

	PAGE
List of Officers and Committees for 1893–94	9-11
Constitution	13-15
By-Laws	15-18
List of Members Elected at Galveston, May 2–5, 1893	19
List of Honorary Members	21
List of Ordinary Members	23-32
Minutes of the Twenty-fifth Annual Session	37-75
Section on Practice of Medicine—	
Address by the Chairman, J. C. Loggins, M. D., Ennis	79-83
"The Association of Diseases and Morbid Processes," by H. A. West, M. D., Galveston	84-96
"Concussion of the Spine," by C. H. Wilkinson, M. D., Galveston	97-112
"The Action and Uses of Pental," by David Cerna, M. D., Ph. D., Galveston	113-132
"The Continued Fevers of Texas Classified," by B. F. Brittain, M. D., Baird	133-140
"Report of Twelve Cases of Typhoid Fever," T. W. Shearer, M. D., Wallisville	141-145
"Reconversion of Peptone into Albumen," etc., by James Kennedy, M. D., San Antonio	146-154
"Report of Ten Cases of Membranous Croup," by I. E. Clark, M. D., Schulenberg	155-157
"Some Notes on Pneumonitis and its Treatment," by C. F. Paine, M. D., Comanche	158-165
"Generalization of Cancer of the Stomach," by Allen J. Smith, A. M., M. D., Galveston	166-179

[illegible]

[illegible]-244

245-248

249-255

256-265

266-275

276-278

279-280

281-285

286-290

291-303

305-312

PAGE

Section on Gynecology—
Report of the Chairman, J. F. Y. Paine, M. D., Galveston.. 313-330
"A Contribution to the Pathology of the Fourchette," by B. E. Hadra, M. D., Galveston 331-334
"Three Cases of Unilateral, Tubal and Ovarian Diseases," by J. Cummings, M. D., Austin..... 335-339
"Cervical or Corporeal Endometritis," by W. M Cunningham, M. D., Bastrop 340-349
"Preventive Gynecology," by M. M. Scott, M. D., Brownwood 350-357
"A Fatal Case of Tubal Pregnancy," by B. F. Kingsley, M. D., San Antonio..... 358-359
"Pelvic Peritonitis and Cellulitis," by Wm. Keiller, F. R. C. S. Ed., Galveston..... 360-372

Section on Ophthalmology and Otology—
Address of the Chairman, Geo. P. Hall, M. D., Galveston, "A Contribution to the Study of Insufficiencies of Ocular Muscles and the Measures Directed to their Relief"..... 373-378
"Neuroses of the Eye due to Stricture of the Male Urethra, with Cases," by John V. Spring, M. D., San Antonio..... 379-384
"Nôtes on Treatment of Tobacco Amblyopia," by B. A. Pope, M. D., Dallas..... 385-387
"Thiersch's Skin Grafts for Pterygia," by H. L. Hilgartner, M. D., Austin..... 388-389
"Dislocation of the Crystaline Lens," by R. C. Hodges, M. D., Galveston..... 390-395
"Treatment of Squint," by R. H. Chilton, M. D., Dallas.... 396-400

Section on Dermatology—
Report of Chairman, R. W. Knox, M. D., Houston..... 401-408
"Acne," by F. E. Daniel, M. D., Austin 409-417
President's Address..... 419-428
Necrological Reports..... 431-434
List of Deceased Members 435-436
List of Auxiliary Societies 437
List of Officers since Organization 438-439
Index 441-448

OFFICERS FOR 1893–94.

PRESIDENT.

J. H. SEARS, M. D.....Waco

FIRST VICE PRESIDENT.

C. M. ROSSER, M. D.....Dallas

SECOND VICE PRESIDENT.

E. M. RABB, M. D.....Hallettsville

THIRD VICE PRESIDENT.

W. A. WATKINS, M. D.....Kemp

SECRETARY.

H. A. WEST, M. D.....Galveston

TREASURER.

J. LARENDON, M. D.....Houston

JUDICIAL COUNCIL.

DR. J. B. BURCH, Aurora.....To serve one year
DR. J. C. LOGGINS, Ennis.....To serve one year
DR. C. B. HUDSON, Alvarado.....To serve one year
DR. O. I. HALBERT, Waco.....To serve one year
DR. M. T. EMANUEL, Weatherford.....To serve two years
DR. J. P. TUCKER, Overton.....To serve two years
DR. B. A. FOWLER, Brownwood.....To serve two years
DR. A. W. FLY, Galveston.....To serve two years
DR. R. RUTHERFORD, Houston.....To serve three years
DR. S. CUNNINGHAM, Bastrop.....To serve three years
DR. W. B. MCKNIGHT, Springtown.....To serve three years
DR. L. ASHTON, Dallas.....To serve three years

ORATOR.

DR. W. R. BLAILOCK.....McGregor

PUBLICATION COMMITTEE.

H. A. West, M. D., Chairman.....Galveston
J. F. Y. Paine, M. D.....Galveston
H. P. Cooke, M. D.....Galveston

COMMITTEE ON NECROLOGY.

J. W. Carhart, M. D., Chairman.....Lampasas
T. D. Wooten, M. D.....Austin

COMMITTEE ON STATE BOARD OF HEALTH.

R. M. Swearingen, M. D., Chairman.....Austin

COMMITTEE OF ARRANGEMENTS.

A. N. Denton, M. D., Chairman.....Austin

Delegates not appointed to American Medical Association and Pan-American Medical Council—to make application to the Secretary for Credentials.

TIME AND PLACE OF MEETING.

Austin..... Fourth Tuesday in April, 1894

CONSTITUTION AND BY-LAWS

OF

THE TEXAS STATE MEDICAL ASSOCIATION.

CONSTITUTION.

ARTICLE I.

The name and style of this association shall be the "TEXAS STATE MEDICAL ASSOCIATION."

ARTICLE II.

The object of this association shall be to organize the regular medical profession of the state in the most efficient manner possible; to encourage a high standard of professional qualifications and ethics; to promote professional brotherhood; to labor for the advancement of state medicine, *i. e.*, of public hygiene; of medical education; of medical jurisprudence and public institutions for the sick and infirm.

ARTICLE III.

Every regularly educated physician within the limits of this state, who is a graduate of a regular medical college in good standing, and who adopts and conforms to the Code of Ethics of the American Medical Association, shall be eligible to membership in this body, except those of the negro race.

ARTICLE IV.

SECTION 1. The officers of this association shall be one president, three vice presidents, one secretary, one treasurer, nine chairmen and secretaries of sections, and twelve members of the judicial council.

SEC. 2. The president and vice presidents shall be elected for one year, the secretary and treasurer shall be elected each for five years, and every officer shall remain in office until his successor is duly elected and installed.

ARTICLE V.

SECTION 1. It shall be the duty of the president to preside at all meetings of the association, when present; to give the casting vote; to see that all the rules of order and decorum are enforced in all deliberations of the body; to sign the approved proceedings of each meeting, and to approve such orders as may be drawn upon the treasurer for expenditures ordered by the association.

SEC. 2. It shall be the duty of the first vice president to preside in the absence of the president, and in the absence of the president and first vice president the second vice president shall preside, and in the absence of the president, first and second vice presidents, the third vice president shall preside.

SEC. 3. In the absence of the president and all the vice presidents, the association shall, by ballot, elect one of its members to preside *pro tem.*

SEC. 4. It shall be the duty of the secretary to keep a true and correct record of the proceedings of each meeting; to preserve all books, papers and things belonging to the archives of the association; attest all orders drawn upon the treasurer for moneys appropriated by the association; keep a register of the members, the dates of their admission and places of residence. He shall attend all committees that may be appointed by the association with such documents as may be necessary for reference; report such unfinished business of previous meetings as may appear on his books requiring action, and attend to such other business as the association may direct. He shall also supervise and conduct all the correspondence of the association.

SEC. 5. It shall be the duty of the treasurer to collect all moneys due the association and receipt for same, and keep the accounts of the association with its members, and pay all orders drawn on him by the president and attested by the secretary and by the chairman of the committee of publication, and make an annual report of the finances of the association, and furnish the secretary with a list of delinquent members, and, if required, give bond for the faithful performance of the duties of his office.

ARTICLE VI.

Vacancies occurring in the offices of the association shall be filled by appointment by the president, and he shall have the appointment of all the committees not otherwise provided for.

ARTICLE VII.

SECTION 1. County and district societies in affiliation with this association shall be entitled to representation at each meeting of the asso-

ciation upon this basis, to-wit, two delegates for every ten members, and one for each fraction of ten over five.

SEC. 2. Before admission to a seat in this association, each delegate shall produce a certificate of delegation duly signed by the secretary of his society, and pay to the treasurer the annual dues of $5.00 and the initiation fee of $5.00.

SEC. 3. Delegates shall have the rights and privileges of members for that meeting of the association to which they are sent.

SEC. 4. Delegates to this association from any other state or national association who shall present certificates of delegation duly signed, shall be entitled to seats and to participate in the scientific business of the association, but shall not be entitled to vote or be required to pay dues.

ARTICLE VIII.

This Constitution shall immediately take effect from its adoption.

BY-LAWS.

ARTICLE I.

The Texas State Medical Association shall meet annually, at such time and place as may be determined by the committee on nominations.

ARTICLE II.

Fifteen members, or any number over, shall constitute a quorum for business.

ARTICLE III.

The president shall call the meeting to order, cause the secretary to read the proceedings of the previous meeting, which, after approval, shall be adopted.

ARTICLE IV.

In case there be no quorum, the meeting shall adjourn from day to day until such quorum be had.

ARTICLE V.

The fee of admission shall be $5.00 United States currency, and the annual dues of each member $5.00 United States currency.

ARTICLE VI.

The usual parliamentary rules governing deliberative bodies shall govern the business workings of this association.

ARTICLE VII.

All questions of business before this association shall be determined by a majority of votes present.

ARTICLE VIII.

It shall be the duty of the president to deliver, at each annual meeting of this association, an address.

ARTICLE IX.

A committee of one member from each county represented shall constitute a committee on nominations for offices and place of meeting. Said committee shall report action one day prior to adjournment.

ARTICLE X.

The secretary of the association shall receive, as a compliment, at each annual session a draft from the president upon the treasurer for the sum of $200 for valuable services rendered the association, said order to be paid by the treasurer, and he shall also be allowed to draw upon the treasurer, as usual, for expenses incident to the office. The treasurer shall receive for his services $150.

ARTICLE XI.

It shall be the duty of the president, three months prior to each annual meeting of this association, to notify, by circular, the profession of the state and county organizations throughout the state and urge attendance.

ARTICLE XII.—JUDICIAL COUNCIL.

SECTION 1. A council consisting of twelve members shall be appointed by the nominating committee, whose duty it shall be to take cognizance of and decide all questions of an ethical or judicial character that may arise in connection with the association.

SEC. 2. Of the twelve members of the council first appointed, the four first names on the list shall hold office for one year, the second four named shall hold office two years, and the third four named shall hold office three years, so that four new members shall be appointed each year, who shall hold office three years. The said council shall

organize by choosing a president and a secretary, and shall keep a permanent record of its proceedings.

SEC. 3. It shall be the duty of the judicial council to discipline members for infraction of the Code of Ethics, or for violation of any special order or resolution of this association, its Constitution or By-Laws. Such discipline may be either (*a*) reprimand, (*b*) suspension for any definite period, (*c*) expulsion from the association.

SEC. 4. Charges against a member shall be presented in writing over the signature of the accuser, with specifications as to time and place of the offense and names and residence of his witnesses, to the chairman of the judicial council, who shall submit the same to the council at its next meeting.

SEC. 5. The judicial council shall consider the charges and specifications, also the reliability of the accuser and the witnesses, and shall then, by vote, decide either to "entertain" or "not entertain" said charges. In the latter case the charges shall be returned to their author with the action of the council endorsed thereon. If the council decides to entertain the charges, it shall notify the accused, furnish him with a copy of the charges, specifications and names of witnesses, also the time and place where the case will be heard. The accuser shall also be notified of the same and instructed to have his witnesses present. After a full hearing the council shall vote upon the guilt of the accused, and if guilty, assess his punishment. As soon after the trial as possible it shall be the duty of the council to report its action to the association.

SEC. 6. The association shall thereupon vote upon the report of the council by ballot, a majority deciding its adoption or rejection. The action of the association shall be final, the association claiming jurisdiction as to who shall constitute its members and what punishment shall be inflicted upon those who violate its rules and regulations.

ARTICLE XIII—SECTIONS.

The general meeting of the association shall be restricted to the morning session, and the afternoon session shall be devoted to the hearing of reports and papers and their consideration, in the following sections:

1. Practice of Medicine, Materia Medica and Physiology.
2. Obstetrics and Diseases of Children.
3. Surgery and Anatomy.
4. Medical Jurisprudence, Chemistry and Psychology.
5. State Medicine and Public Hygiene.
6. Gynecology.
7. Opthalmology and Otology.

8. Dermatology and Medical Botany.
9. Microscopy and Pathology.

The chairmen and secretaries of the several sections shall, like other officers of the association, be nominated by the nominating committee. They shall hold their office until the close of the proper business of the annual meeting next succeeding their election and until their successors are appointed.

NEW MEMBERS 1893.

NAME.	POSTOFFICE.	COUNTY.
Abney J. A	Lampasas	Lampasas
Armstrong V. P.	Dallas	Dallas
Barham J. H	Nacogdoches	Nacogdoches
Barrell Chas. C	Galveston	Galveston
Bever Wm. J	Creek	Houston
Brown A. N	Richland	Navarro
Cerna David	Galveston	Galveston
Collins W. B	Lovelady	Houston
Ducie W. I	Galveston	Galveston
Duke F. M	Alvin	Brazoria
Farrell A. J	Wharton	Wharton
Flavin Thomas	Galveston	Galveston
Gary J. M	Galveston	Galveston
Haden Jno. B	Galveston	Galveston
Hale J. W	Waco	McLennan
Hendrick J. P	Galveston	Galveston
Hudson S. E	Austin	Travis
Hughes C. T	Meridian	Bosque
Keiller Wm	Galveston	Galveston
King Frank B	Lampasas	Lampasas
Largent J. W	McKinney	Collin
McAlpine W. A	Galveston	Galveston
Menefee A. J	Rio Vista	Johnson
Noster C. H	New Braunfels	Comal
Parker G. D	Alvin	Brazoria
Powell J. H. E	Smithville	Bastrop
Price J. Sam'l	Beaumont	Jefferson
Red S. C	Houston	Harris
Schenk A. H	Kenney	Austin
Scott J. W	Houston	Harris
Shearer J. W	Wallisville	Chambers
Smith Allen J	Galveston	Galveston
Smith Matthew M	Austin	Travis
Sproule R. M	Wallisville	Chambers
Stuart J. R	Houston	Harris
Thompson Jas. E	Galveston	Galveston
Wall J. E	Carthage	Panola

HONORARY MEMBERS.

NAME.	POSTOFFICE.	STATE.
Bozeman Nathan	New York	New York
Caldwell John C	Boylston & Exeter Sts., Boston	Massachusetts
Heard T. J.	Galveston	Texas
Keller Jas. M	Hot Springs	Arkansas
Litten J. M	Austin	Texas
Love I. N	St. Louis	Missouri
Lydstone Frank G	Chicago	Illinois
McGuire Hunter	Richmond	Virginia
McMurtry Louis S	Louisville	Kentucky
Meyer J. M	Danville	Kentucky
Milliken Sam'l E	New York	New York
Madden T. More	55 Merrion Square Dublin	Ireland
Noyes J. F	535 Broad Street Providence	Rhode Island
Osborne T. C	Cleburne	Texas
Price Joseph	20 & Hamilton Sts. Philadelphia	Pennsylvania
Raines C. B	Mineral Wells	Texas
Reed R. Harvey	Mansfield	Ohio
Smith Albert H	Philadelphia	Pennsylvania
Souchon Edmund	New Orleans	Louisiana
Thompson W. G	49 E. Thirtieth St. New York	New York
Wyeth John A	New York	New York
Yandell David W	Louisville	Kentucky
Young S. O	Galveston	Texas

ORDINARY MEMBERS.

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Abney J. A	Lampasas	Lampasas	1893
Adams W. A	Fort Worth	Tarrant	
Akard G. W	Springtown	Parker	1890
Alexander C. M	Coleman	Coleman	1887
Alexander W. P	Cleburne	Johnson	1890
Allen Frank	Belton	Bell	
Anderson G. M	Tanglewood	Lee	
Archer W. A	Houston	Harris	1872
Armstrong A. M	Crawford	McLennan	
Armstrong V. P	Dallas	Dallas	1893
Ashton L	Dallas	Dallas	1892
Atkinson R	San Marcos	Hays	1889
Baldinger W. H	Galveston	Galveston	1892
Baldwin A. P	Tyler	Smith	1891
Barham S. H	Nacogdoches	Nacogdoches	
Barham J. H	Nacogdoches	Nacogdoches	1893
Barker W. L	Waco	McLennan	
Barnwell J. J	Webberville	Travis	1891
Barrell Chas. C	Galveston	Galveston	1893
Bass J. D	Pittsburg	Camp	1883
Bass T. B	Terrell	Kaufman	1892
Beall E. J	Fort Worth	Tarrant	1874
Becton E. P	Sulphur Springs	Hopkins	1876
Bell T. J	Tyler	Smith	
Bennett Edward	San Antonio	Bexar	
Bennett T. J	Austin	Travis	1884
Benton Geo. W	Woodbury	Hill	1892
Berg L. M	Laredo	Webb	1890
Bever Wm. J	Creek	Houston	1893
Black C. C	Round Rock	Williamson	
Blalock W. C	Kosse	Limestone	1886
Blailock W. R	McGregor	McLennan	1889
Blewett W. J	Beaumont	Jefferson	1891
Blunt W. F	Galveston	Galveston	
Bobo C. S	Aurora	Wise	1884
Boggs A. D	Marquez	Leon	1889

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Blake D. B	Cuero	DeWitt	
Bowers S	Brenham	Washington	
Bramlett Albt. C	Decatur	Wise	1892
Braunagle Julius	San Antonio	Bexar	1889
Bristow B. W	Flatonio	Fayette	1885
Brittain B. F	Baird	Callahan	
Brooks W. B	Dallas	Dallas	1882
Brown A. P	Fort Worth	Tarrant	1876
Brown B. J	Crawford	McLennan	
Brown W. E	Gatesville	Coryell	1890
Brown A. N	Richland	Navarro	1893
Buie J	Hillsboro	Hill	1889
Bundy Z. T	Milford	Ellis	1890
Burch J. D	Aurora	Wise	1890
Burger W. M	Cornelia	Armstrong	1891
Burleson J. M	Lampasas	Lampasas	1886
Burroughs J. J	Houston	Harris	
Burroughs Sam R	Raymond	Leon	1876
Burts W. P	Fort Worth	Tarrant	1878
Butler S. L	Omen	Smith	1892
Callen W. P	Warren	Tyler	1892
Capps E. D	Fort Worth	Tarrant	1892
Carhart J. W	Lampasas	Lampasas	1886
Carpenter Wm. B	Mart	McLennan	1891
Carter J. L	Dallas	Dallas	
Caston Wm	Corsicana	Navarro	
Cartright J. W	Amarillo	Potter	1886
Castleton E. L. E	Houston	Harris	1886
Cerna David	Galveston	Galveston	1893
Chandler J. N	Glen Rose	Somervell	1891
Chilton R. H	Dallas	Dallas	1881
Christian G. W	Burnet	Burnet	1886
Church B. F	Terrell	Kaufman	1889
Clark I. E	Schulenberg	Lavaca	1885
Clark Eugene	Lockhart	Caldwell	
Clay C. L	Moody	McLennan	1886
Claywell D. W	Troy	Bell	1884
Clopton A. G	Jefferson	Marion	1874
Coleman P. C	Colorado City	Mitchell	1885
Conerly T. W	San Angelo	Tom Green	1883
Collier E. S	Wills Point	Van Zandt	1892
Collins W. B	Lovelady	Houston	1893

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Cooke H. P	Galveston	Galveston	1885
Cooper St. Cloud	Jefferson	Marion	1890
Cowling Jas	Houston	Harris	
Cravens M. H	Arlington	Tarrant	1892
Crow C. J	Coryell City	Coryell	1891
Crump J. G	St. Jo	Montague	1885
Cunningham Sam	Elgin	Bastrop	1887
Cunningham W. M	Bastrop	Bastrop	1891
Cupples Geo	San Antonio	Bexar	
Curtis A. M	Waco	McLennan	
Daniel F. E	Austin	Travis	1882
Daniels J. G	Tyler	Smith	1886
Darr H. H	Caldwell	Burleson	1877
Davis J. A	Austin	Travis	1890
Davis T. P	Canton	Van Zandt	1892
Dean J. F	Hornsby	Travis	1889
De La Garza M. M	San Antonio	Bexar	1892
Denton A. N	Austin	Travis	
Dial J. J	Sulphur Springs	Hopkins	
Dillard J. L	Richmond	Fort Bend	1888
Dollar J. M	Burlington	Milam	1889
Douglass A. M	Osceola	Hill	1881
Drake Wm. M	Abbott	Hill	1886
Ducie W. I	Galveston	Galveston	1893
Dudley H. W	Hillsboro	Hill	1882
Duke F. M	Alvin	Brazoria	1893
Duringer W. A	Fort Worth	Tarrant	1887
Eads B. F	Marshall	Harrison	
Eagon S	Dallas	Dallas	
Earps J. H	Corsicana	Navarro	1892
Eastland Orin	Wichita Falls	Wichita	1882
Emanuel M. T	Weatherford	Parker	
Embry John A	Decatur	Wise	1892
Evans W. T	Jewett	Leon	
Farrell A. J	Wharton	Wharton	1893
Fennell J. W	Seguin	Guadalupe	
Fennell J. D	Seguin	Guadalupe	1887
Ferris J. H	Henrietta	Clay	1886
Ferrell J. R	Waco	McLennan	1892
Fields J. T	Fort Worth	Tarrant	1872
Fisher F. K	Galveston	Galveston	1880
Fisher Wm. C	Galveston	Galveston	

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Flavin Thomas	Galveston	Galveston	1893
Fleming W. F	Georgetown	Williamson	1889
Fly A. W	Galveston	Galveston	1877
Fly J. M	Leesville	Gonzales	1889
Ford F. C	Nacogdoches	Nacogdoches	
Ford J. F	Decatur	Wise	1884
Foscue G. B	Waco	McLennan	1891
Fountain H. L	Bryan	Brazos	1889
Fouts J. J	Gonzales	Gonzales	1891
Fowler B. A	Brownwood	Brown	1891
Frazier J. M	Morgan	Bosque	1879
Frazier J. R	Morgan	Bosque	1891
Fry J. M	Elmo	Kaufman	1890
Gallaher J. W	Graham	Young	1890
Gardner A. B	Bellville	Austin	1880
Garwood A	New Braunfels	Comal	1887
Gary J. M	Galveston	Galveston	1893
Gentbruck R	Houston	Harris	1889
Ghent H. C	Belton	Bell	1877
Gibson J. E	McKinney	Collin	1889
Gilbert S. L	Sulphur Springs	Hopkins	1886
Gilchrist J. E	Gainesville	Cooke	1884
Gilsen F. J	Calvert	Robertson	1887
Goodman W. J	Tyler	Smith	
Grammer R. B	Fort Worth	Tarrant	1884
Gray A. J	Ben Wheeler	Van Zandt	1887
Gray Frank	Fort Worth	Tarrant	1886
Gray J. I. L	Mexia	Limestone	1892
Gwin C. L	Galveston	Galveston	1880
Haden Jno. B	Galveston	Galveston	1893
Hadra B. E	Galveston	Galveston	1873
Halbert O. I	Waco	McLennan	1881
Hale J. W	Waco	McLennan	1893
Hall Geo. P	Galveston	Galveston	
Harris D	Whitney	Hill	1889
Harrison R. H., Jr	Columbus	Colorado	
Haughton R. E	Midland	Midland	1891
Hendrick J. P	Galveston	Galveston	1893
Herff Adolph	San Antonio	Bexar	
Herff Ferdinand	San Antonio	Bexar	
Hicks F M	San Antonio	Bexar	
Hilgartner H. L	Austin	Travis	1892

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Hodges R. C	Galveston	Galveston	1888
Holloway J. A	Round Rock	Williamson	1890
Holt C. I	Kilgore	Gregg	1892
Hudson C. P	Alvarado	Johnson	1886
Hudson J. W	Milano	Milam	1891
Hudson T	Belton	Bell	
Hudson S. E	Austin	Travis	1893
Hughes C. T	Meridian	Bosque	1893
Inge J. M	Denton	Denton	1885
Jarrett J. C	Valley Mills	Bosque	1891
Johnson Clay	Corsicana	Navarro	1892
Johnson S. W	Corsicana	Navarro	
Jones J. C	Gonzales	Gonzales	1878
Jones L. L	Forney	Kaufman	1891
Jones W. C	Walnut	Bosque	1891
Jones W. T	Hochheim	De Witt	1884
Jordan J. D	Madisonville	Madison	
Jordan P	Beaumont	Orange	
Karnes T. C	Gonzales	Gonzales	1890
Keiller Wm	Galveston	Galveston	1893
Kemp Joseph	Thorp Springs	Bosque	1890
Kendall O. J	Wichita Falls	Wichita	1886
Kennedy Jas	San Antonio	Bexar	1891
Kennedy M. B	Hillsboro	Hill	1890
Kimmins R. L	Iredell	Bosque	1891
King Frank B	Lampasas	Lampasas	1893
King J. C. J	Waco	McLennan	1878
Kingsley B. F	San Antonio	Bexar	1886
Kirkpatrick S. B	Commerce	Hunt	1884
Knox M. D	Hillsboro	Hill	
Knox R. T	Gonzales	Gonzales	1878
Knox R. W	Houston	Harris	1885
Lancaster W. H	Moulton	Lavaca	1887
Larendon G. W	Houston	Harris	1891
Larendon J	Houston	Harris	1869
Largent J. W	McKinney	Collin	1893
Lee B. F	Rockdale	Williamson	1890
Lee Geo. H	Galveston	Galveston	1888
Le Grand C. W	Hempstead	Waller	1877
Lewright J. O	Austin	Travis	1887
Link E. W	Palestine	Anderson	1889
Litten Frank	Austin	Travis	1889

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Loggins J. C	Ennis	Ellis	1882
Luckett H. P	Bastrop	Bastrop	1889
Lynch M. C	Carroll's Prairie	Hopkins	1892
Mahan L. L	Hempstead	Waller	1891
Martin F. R	Kyle	Hays	1884
Mathews W. J	Austin	Travis	1891
Matkin M	Fort Worth	Tarrant	
Mathews C. O	Belden	Morris	1892
Matthews J. A	Hondo City	Medina	
Maxwell T. O	Austin	Travis	
Mayes C. M	Archer	Archer	1890
May J. L	Stephensville	Erath	
McAlpine W. A	Galveston	Galveston	1893
McCaleb J. H	Webberville	Travis	1889
McCall R. A	Ennis	Ellis	1886
McDaniel J. H	Centerville	Leon	1890
McDaniel A. S	San Antonio	Bexar	
McGehee D. B	Brownwood	Brown	1891
McGhee J. A	Rice	Navarro	1891
McGhee R. W	Ammonsville	Fayette	1891
McGregor J. D	Kenneyville	Austin	
McKenzie E. K	Tyler	Smith	1892
McKnight W. B	Springtown	Parker	1889
McLaughlin J. W	Austin	Travis	1875
McLean W. S	Itasca	Hill	1890
McManus Chas	Brownsville	Cameron	1887
Means W. P	Cotton Gin	Limestone	1891
Menefee E. L	Granbury	Hood	1886
Menefee W. E	West	Hill	1891
Menefee A. J	Rio Vista	Johnson	1893
Meyers W	Seguin	Guadalupe	1886
Miller J. W	Hillsboro	Hill	1888
Miller T. A	Corsicana	Navarro	1891
Minnock R. F	Waco	McLennan	
Monday W. H	Terrell	Kaufman	1892
Montgomery A. L	Tyler	Smith	1888
Montgomery D. W	Concord	Leon	1891
Moody R. E	Sweetwater	Nolan	1890
Morris J. E	Madisonville	Madison	1891
Morris W. A	Austin	Travis	1875
Moss R. E	San Antonio	Bexar	1884
Morton W. A	Cottondale	Wise	1888

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Murdock E. P	Oakwood	Leon	1886
Musick J. T	Pittsburg	Camp	1887
Motley John G	Overton	Rusk	1892
Nettles R. C	Marlin	Falls	1877
Newland W. B	Gatesville	Coryell	1892
Noster C. H	New Braunfels	Comal	1893
Nott T. H	Goliad	Goliad	
Oates T. F	Mexia	Limestone	1890
O'Barr J. T	Ledbetter	Washington	1890
O'Brien J. G	Dublin	Erath	
O'Bryan A. F	Longview	Gregg	1892
O'Hara J. H	Grandview	Johnson	1887
Olive N. A	Waco	McLennan	1887
Oliver J. P	Caldwell	Burleson	1874
Orr C. L	Oakville	Live Oak	1890
Osborn J. D	Cleburne	Johnson	1882
Paine C. F	Comanche	Comanche	1882
Paine J. F. Y	Galveston	Galveston	1877
Pannill Wm	Chatfield	Navarro	1883
Parker Daniel	Calvert	Robertson	1887
Parker G. D	Alvin	Brazoria	1893
Patterson G. M. D	Franklin	Robertson	1889
Paulus A. D	Flatonia	Fayette	
Perl Michael	Houston	Harris	1885
Perkins A. N	Sabine Pass	Jefferson	
Pitts F. M., Jr	Hubbard City	Hill	
Pope B. A	Dallas	Dallas	
Pope Irwin	Tyler	Smith	1888
Pope Jno. H	Marshall	Harrison	
Pope R. J	Jonesboro	Coryell	1891
Powell W. M	Albany	Shackelford	
Powell W. P	Willis	Montgomery	
Powell J. H. E	Smithville	Bastrop	1893
Poynor J. S	Bartlett	Williamson	1891
Pratt J. M	Aquilla	Hill	1891
Preston John	Terrell	Kaufman	1887
Price J. Sam'l	Beaumont	Jefferson	1893
Pugh W. W	Rusk	Cherokee	1892
Rabb E. M	Hallettsville	Lavaca	1887
Raines C. B	Mineral Wells	Palo Pinto	1890
Randall L. J	Aurora	Wise	1890
Randall Edward	Galveston	Galveston	

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Rape Thos. A	Ballinger	Runnels	1891
Ray D. M	Whitewright	Grayson	1882
Red S. C	Houston	Harris	1893
Renfro J. C. B	LaGrange	Fayette	1875
Rentz J. H	Ferris	Ellis	1890
Rice S. P	Marlin	Falls	1881
Richardson D. P	Henderson	Rusk	1892
Richmond W. T	Manor	Travis	1891
Robuck T. B	Italy	Ellis	1892
Rogers J. D	Chappel Hill	Washington	
Rogers W. L	Temple	Bell	
Rosser C. M	Dallas	Dallas	1886
Sampson A. F	Galveston	Galveston	
Saunders B	Fort Worth	Tarrant	
Schenk A. H	Kenney	Austin	1893
Schmidt F. A	Schulenberg	Fayette	1889
Scott M. M	Brownwood	Brown	1891
Scott J. W	Houston	Harris	1893
Seale W. H	Marquez	Leon	1891
Sellman B. E	Rogers' Prairie	Leon	1892
Sears J. H	Waco	McLennan	1869
Shirley D. G	Tyler	Smith	1892
Sessions E. L	Hillsboro	Hill	
Shands N. B	Forney	Kaufman	1886
Shearer J. N	Wallisville	Chambers	1893
Shelton S. E	Waco	McLennan	1887
Sholars S. W	Orange	Orange	1889
Shropshire L. L	San Antonio	Bexar	1885
Sims R. S	Iowa Park	Wichita	1891
Smith C. A	Tyler	Smith	1889
Smith M	Black Jack Gr've.	Hopkins	1892
Smith Q. C	Austin	Travis	1884
Smith Allen J	Galveston	Galveston	1893
Smith Matthew M	Austin	Travis	1893
Snead A. H	Waco	McLennan	
Snyder E. W	Benbrook	Tarrant	1890
Southerland G. W	Winchester	Fayette	
Sparkman J. T	Alvord	Wise	1890
Sproule R. M	Wallisville	Chambers	1893
Stallcup J. H	Jefferson	Marion	
Starley J. F	Marlow, I. T		
Starley W. F	Tyler	Smith	

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Steiner Ralph	Austin	Travis	
Stephens G. M	Beeville	Bee	1889
Stuart D. F	Houston	Harris	1859
Stuart J. R	Houston	Harris	1893
Suttle I. N	Corsicana	Navarro	1891
Swearingen R. M	Austin	Travis	1876
Swindall F. W	Alba	Wood	1892
Sykes Geo. S	Galveston	Galveston	
Talley R. P	Temple	Bell	1880
Tate H. L	Lindale	Smith	1892
Terrell W. M	Farmer	Young	1886
Thomas G. T	Rogers	Bell	1891
Thomas I. E	Mexia	Limestone	1886
Thomason J. W	Huntsville	Walker	1887
Thompson F. D	Fort Worth	Tarrant	
Thompson Jas. E	Galveston	Galveston	1893
Thorpe H. H	Liberty Hill	Williamson	1884
Towns J. M	Joshua	Johnson	1890
Trueheart C. W	Galveston	Galveston	
Tucker F. H	San Augustine	San Augustine	1886
Tucker J. P	Overton	Smith	1888
Tye R. P	Clarendon	Donley	1890
Tyner T. J	Austin	Travis	
Van Gasken J	Luling	Caldwell	1889
Vaughan B. H	Vaughan	Hill	1890
Wakins W. B. W	Eureka	Navarro	1890
Walker A. C	Rockdale	Milam	
Walker W. W	Schulenberg	Fayette	1878
Wall J. E	Carthage	Panola	1893
Wallace D. R	Waco	McLennan	1869
Watkins W. A	Kemp	Kaufman	1891
Watkins W. B	Stone Point	Van Zandt	1886
Weathered A. J	Waco	McLennan	1890
Weller C. O	Austin	Travis	1887
West H. A	Galveston	Galveston	1887
West W. B	Fort Worth	Tarrant	1889
White F. S	Austin	Travis	1886
White J. A	Prairie Plains	Grimes	1890
White W. P	Henderson	Rusk	1892
Wier R. R	Itasca	Hill	1886
Wilkes W. H	Waco	McLennan	
Wilkes W. O	Waco	McLennan	1891

NAME.	POSTOFFICE.	COUNTY.	ELECTED.
Wilkinson C. H	Galveston	Galveston	
Williamson J. R	Brenham	Washington	1885
Williamson R. A	Woodbury	Hill	1887
Willis Jas. A	Waco	McLennan	1873
Wilson J. T	Sherman	Grayson	
Witherspoon H. F	Corsiciana	Navarro	1891
Wolff A. S	Brownsville	Cameron	1888
Wolverton A. J	Montague	Montague	
Wooten T. D	Austin	Travis	
Worsham B. M	Austin	Travis	1890
Wortham P. K	Waco	McLennan	1891
Wysong J. H	Walnut	Bosque	1891
Yater W. M	Grand View	Johnson	1887
York W. L	Decatur	Wise	1882

MINUTES

OF THE

TWENTY-FIFTH ANNUAL MEETING

OF

THE TEXAS STATE MEDICAL ASSOCIATION,

GALVESTON, TEXAS,

May 2nd, 3rd, 4th and 5th, 1893.

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TWENTY-FIFTH ANNUAL MEETING

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THE TEXAS STATE MEDICAL ASSOCIATION,

GALVESTON, TEXAS,

May 2nd, 3rd, 4th and 5th, 1893.

TEXAS STATE MEDICAL ASSOCIATION—TWENTY-FIFTH CONVENTION.

FIRST DAY—*Morning Session.*

HARMONY HALL, GALVESTON, Texas, May 2, 1893.

Meeting called to order by Dr. H. A. West, chairman of the committee on arrangements.

Rev. Wm. N. Scott opened the proceedings with prayer.

Hon. R. L. Fulton, mayor of Galveston, then delivered the following address of welcome:

HON. R. L. FULTON'S ADDRESS.

Mr. President and Members of the Texas State Medical Association: I appear before you today by the courtesy of your Galveston membership to speak but one word, to voice but one sentiment—welcome. When that word is spoken by the mayor of a city in his official capacity in behalf of the entire population he represents, his mission, to whatever audience he may deliver an address, is fulfilled, and especially so when he professes no special knowledge on the subjects that such assemblages have met to discuss.

I therefore conclude that a lecture from me on these important subjects would not prove to you either profitable or very entertaining, and will content myself with again assuring you of a hearty and sincere welcome to the Oleander City and expressing the hope that your sojourn among us may be, in every way, so delightful as to never be forgotten.

Dr. Geo. H. Lee, chairman of the reception committee, delivered the following address of welcome on behalf of the Galveston County Medical Society and the physicians of Galveston:

DR. LEE'S ADDRESS.

Mr. President and Assembled Members: Without disparagement to the gentlemen who have spoken, I feel that I am the bearer of a message of welcome to you which touches you a little more closely

than any other that will be extended to you this morning. It is from the medical profession of Galveston, and comes to you as the touch elbows of brothers at arms as the ranks close up and the columns form in the march of progress. Men of little leisure, in a profession which knows few holidays, from fields of quiet, unremitting labor and great responsibilities, it is meet and proper you should come together for a season of rest and mutual pleasure. We count ourselves honored that you have come among us, and sincerely trust that the good wishes for your cheer and comfort will be fully realized.

May the soft south breeze, fresh with the brine of the ocean, gently dispel all thought of care, past and future, and may your stay in Galveston leave an impression like the soothing refrain you catch from the distant murmur of the Mexic gulf.

But rest and pleasure are only a small portion of the purpose which has brought you together. From the halls and lecture rooms and laboratories of the college of graduation, the walks of the profession are in many and various directions all tending to the common end. Thousands of busy men search with the microscope the secrets of histology, pathology and bacteriology; as many follow the cause of truth in the realms of experimental physiology and therapeutics, and far many more carefully observe and study the ills of the human race in the fields of clinical medicine and surgery. The medical press is the common ground upon which these forces meet, where all are brought together to contribute to the same progress. But it is in assemblies like this where mind feels directly the force of assisting and opposing mind, where thought meets thought, that ideas are crystallized and are originated those strides majestic which have marked ours permanently as the age of progress in medicine. I say it in the fullest confidence that even in this day, justly known as the age of electricity, not even that science has outstripped the science of medicine in brilliancy of achievement. Yet, man is finite, the range of knowledge infinite. Each unfolding of a great truth broadens the view of what is yet unaccomplished and teaches more forcibly that we are still gathering "a few pebbles upon the great seashore of knowledge." Rich as are the achievements of the past, far richer is the promise of the future. If there is one feature of medical professional life which would contribute more largely were opportunity more frequently afforded, it is this factor that is brought about by the assembling of physicians for the purpose of discussing medical topics.

If you will pause one moment to consider that of the three liberal professions, typified by the three black gowns—divinity, law and medicine—and it is only by courtesy that I accord the order of this mention, the members of the medical profession are less often and less

freely brought together. There is less contact of mind and mind. You will realize this is not as it should be. Patient investigation, earnest thought, carefully woven theory, accurate observation, demand comparison, opposition, indorsement, crystallization, to pass through the crucible of the judgment and experience of numbers before it can obtain acceptance as recorded truth. And yet these truths will, in the future, very often be modified or entirely unsettled by the light of future labors. Such assemblies bring not only broadened experience and light in obscurity, but also encouragement and confidence. To such a gathering in the full fruits of its highest realization, we wish to welcome you, even as we welcome you to our city and to our homes.

An address by T. J. Ballinger, Esq., representing the citizens of Galveston, was the next item on the program, but as Mr. Ballinger was absent from the city, Dr. West proceeded with the report of the committee on arrangements, of which he was chairman.

REPORT OF THE COMMITTEE ON ARRANGEMENTS.

Mr. President and Gentlemen: You have in your hands a copy of the printed program containing an outline of the social entertainments to be given during the meeting, with a list of papers to be presented. We have endeavored to make this program as full and explicit as possible, and have little to say in addition, except to express our gratitude and appreciation to the medical profession and citizens of Galveston who have freely and generously contributed the required funds for your entertainment. If you enjoy yourselves to the utmost, and this session proves to be one long to be remembered both for the pleasure and profit incident to it, then our committee will feel amply repaid for the labor and trouble we have undergone.

The following is the social program:

Tuesday afternoon at 5.30 o'clock—Visit to Medical college and Sealy hospital. 8 o'clock—Commencement exercises Medical Department State University at Harmony Hall.

Wednesday evening, 8 to 11 o'clock—Reception by Hon. and Mrs. Walter Gresham, Fourteenth and Broadway.

Thursday evening, 6 to 11 o'clock—Concert, buffet banquet and dance, given by the medical profession and citizens, at the Garten Verein. President Osborn's address at 8 p. m. at the Garten.

Friday afternoon at 4 o'clock—Sail on Galveston bay.

At the conclusion of his report, Dr. West introduced Dr. J. D. Osborn, of Cleburne, president of the association, who

spoke in response to the welcome extended by Mayor Fulton and Dr. Lee. He regretted that he had been unable to induce Dr. Swearingen to take this duty upon himself, for the occasion was such as to call for the best oratory the association possessed. It could not be done, however, as Dr. Swearingen flatly refused. So he would have to do the best he could. He then, in a neat and well worded address, thanked the gentlemen, and through them the citizens and physicians of Galveston, for the welcome extended. "But," said he, in conclusion, "the sound of the waves, the balmy gulf breezes, the odors of beautiful flowers, the songs of tropical birds and the other beauties and attractions of this charming city are one thing and the duty we have to perform is another. We are here not for pleasure, but for work, and the sooner we get at it the better. I shall now read you my message:"

PRESIDENT OSBORN'S MESSAGE.

Fellow Members of the Texas State Medical Association: Today our eyes are gladdened by the rich harvest which that little germ planted twenty-four years ago in the city of Houston has borne, and before me are medical men, representing every part of our great state, who are here to demonstrate the great good of this association and to participate in the professional and social benefits inuring from that membership. Let us honor that little band of noble workers to whose courage and wisdom we owe all this, and with renewed determination let us continue the good work, remain true to the rich heritage, and fight valiantly to the end.

We believe that under our operations a great reformation ought to be worked out. Time and time again we have attempted, through our learned and diligent committees sent from this body, to get our legislature to enact a law to regulate the practice of medicine. The failure upon their part should not discourage us. We must keep hammering away at it until quacks are banished from our state, and I would recommend that this association pass, by a unanimous vote, a resolution requiring its own members to have the moral courage to prevent persons from entering upon the study of medicine whose preliminary education is inadequate for the undertaking. By this I mean to use their influence wherever it will avail, and especially in regard to their office students. In this way we can aid the Medical Department of our State University, for they value their examination papers

both as to their literary and medical merits. Working on this plan, we would soon find our young men eager to take advantages offered them at home, instead of seeking other fountains of knowledge where they are not received on their literary attainments.

It is absolutely essential for the preservation of the profession that preliminary examinations upon spelling, grammar, English literature and the classics should be required of any student who may apply for permission to enter upon the study of medicine. After we have taken this broad view and made this stand for higher medical education, and to enable us to make the issue with a rainbow of promise, I would recommend that we, through a committee, petition our legislative powers to give us annually three beneficiary scholarships, to be known as the Texas State Medical Association beneficiary scholarship in the Medical Department of the State University, and the same to be in charge of the three vice presidents of the association, whose duty it shall be to advertise the same freely from the adjournment of the association until the fifteenth of September each year, and the same to be awarded to the student passing the most satisfactory examination in the English branches. Upon a certificate from said officers, the student would receive from the secretary of this association his order for a free scholarship. When this is well understood, the medal of the Texas State Medical Association would be eagerly sought after, and I feel confident that one of these three young men would win the prize medal, and it would incite greater interest in this state among the young men entering, or intending to enter, upon the study of medicine.

If in your wisdom this should seem fair, and you adopt the suggestion, and our wishes and prayers be granted by the powers that be, and I have an abiding faith that they would do so, it would then be right and proper for the nominating committee to elect for vice presidents one from north, central and south Texas, and have in view those who would take great interest in looking after this important work.

Since the powers that be have established the office of county health officer, without calling on this association for advice or consultation as to such appointment, it might seem presumptuous or improper in our association to make them any suggestions, but I can see how we might, through the same health officers, establish a wonderful system of collecting vital statistics, and I would suggest that a committee be appointed at once, whose duty it shall be to explain our wishes to the legislature and secure, if possible, an addition to the law governing county health officers, requiring every one of them to keep a correct record of the births and deaths and endemic and epidemic diseases

occurring in the county, and said law to so extend as to compel every physician throughout the state to make weekly reports to the county physician, and the county physician to make monthly reports to the state health officer, and the state health officer would make, annually, a report which this association would have the benefit of. We would then have a reliable record of valuable statistics, and could point with pride to our work, and willingly would our association crown our state health officer with a chaplet of richest jewels.

While we are not permitted by these same powers that be to control or lead in sanitary affairs or proclaim quarantine, it does not lessen our duty as an association nor our duty to our fellow men to be ever on the outlook, and we must perform our duty faithfully and promptly; we must educate the people in the principles of health and the penalties for their violation. For this we receive no praise or fame, but we still keep the priceless luxury of doing good. To this end I would suggest the appointment or selection of a standing committee to report annually to the association on the "sanitary resources of Texas" in reference to its "air, soils and water," both potable and medicinal waters, climate, advantages, and the peculiarities of each particular and peculiar region of the state, with the effects of same on the people thereof. I know that this work will be arduous, but a committee can make it very interesting, and it will become an important factor in our proceedings.

Another suggestion that I would make to you, that we create the office of annual orator, whose duty it shall be to deliver an oration to the association on the first night after the opening of the session. The election or selection of his subject be left entirely to his choice, and that this office be filled by the nominating committee. We have many gifted and brilliant minds from among your members, and each year we would select one who would interest us greatly, furnishing food for thought and reflection, and thus enable us to pass a pleasant evening. I remember that we once had an essayist selected, but why the custom was dropped my memory fails to recall. Let us try it again, and mark my prediction, the looking forward to that evening's entertainment will be one of the most pleasing thoughts connected with the meeting. It will not only be profitable and interesting, but it will also be on the social order one of the leading features.

I would suggest that a part of the morning of the third day be set aside for the calling of the roll of county medical societies and hearing reports from them through their accredited delegates. Let us give more prominence to county societies; in that way we can get more influence. Let us extend a cordial invitation to them to send in voluminous reports of their work; thus we get many of the professional

brothers who would not otherwise work interested in our meetings; they begin then to organize more efficiently in the counties, and from the counties they all come to us. Let our worthy secretary notify each county medical society of a cordial invitation to unite with us. We should try and get them to attend by their representatives, and thus secure membership of some who might otherwise remain outside. This hour or two devoted to their reports will fill a long felt want, to my mind, for I have never yet seen any attention paid to delegates as county representatives. Think over this, and let us form a plan to make these visiting delegates feel that their services as delegates are not thrown away. Let us instruct our secretary to send to each and every county society a cordial invitation to meet with us; send in an annual report of their meetings, their workings, their success, their membership. This interest has been lacking too long; we must have them with us, and have a part of a day set aside for such reports.

In drawing this message to a close, I am pained to inform you that amidst our cordial greetings we have cause for sorrow, as many of our true and tried and honored fellows have passed away, and the roll of our dead will show that we too have suffered, and our loss is great, yet while we lament them we feel sure that the good work they did while among us has prepared them to stand unfaltering and undaunted before the great white throne. We will miss them, and never hear Francis, Ward, Pope, Crowe, Nicholson and others answer the roll call any more. Peacefully they rest; watched are the mounds over which we weep; loving eyes and fond hearts wait for a reunion with them in the great unknown beyond. I pass this part of the report with bowed head to the committee on necrology, who, I feel satisfied, will do all honor to our noble dead, and their report be a credit to them and reflect honor upon the association.

It gives me pleasure to report that no friction has arisen, nor does any now exist, between myself and my associates. The government of the association has been an easy matter to handle, for we believe the government is best which is governed the least. Your able secretary has done his work well, and I wish to return him thanks, together with my able vice presidents, for their counsel and assistance, and before closing I wish to acknowledge my thanks for the high compliment conferred in making me your presiding officer. To be president of this association is a distinction worthy of the most vaulting ambition. Now, let your generosity extend the mantle of charity over my errors. Believe me, they are of the head and not of the heart. As we enter upon the business before us, let us each one resolve to make it an harmonious session, replete with good fellowship and full of instruction for our weary brains seeking more light.

Surrounded as we are with so many pleasant environments, I can but augur a happy meeting, and now bid you enter upon the business before you.

Roll call next in order, was proceeded with till a quorum was found to be present.

Reading of the minutes of last meeting was, on motion, dispensed with.

Secretary West next read his annual report, which, on motion, was referred to a committee, consisting of Drs. J. H. Sears, C. F. Paine and B. F. Brittain.

SECRETARY'S ANNUAL REPORT.

Mr. President and Gentlemen: I have the honor to present herewith my annual report. As the matters pertaining to the details of publication of the volume of transactions constitute the most important part of the secretary's duties, I shall incorporate such details in this report.

There were on the roll at last report—

Ordinary members	356
Honorary members	13
Total	369

On the roll May 1, 1892—

Ordinary members	417
Honorary members	21
Total	438

(New members: Ordinary, 35; honorary, 8; reinstated, 24; roll last report, 369. Total, 436.)

We have lost by death one member, viz., Dr. E. J. Ward, of Waxahachie, died December 17, 1892.

There has been one resignation—Dr. T. B. Taylor, of Muldoon—resigned September, 1892.

One name has been added which had been omitted, leaving the number now on the roll 437.

Several ex-members of the association have died since the last report, viz.: Dr. E. G. Nicholson, of Del Rio, Val Verde county; died February 3, 1893. Dr. M. S. Crowe, of Stephenville, Erath county; died May 3, 1892. Dr. C. C. Francis, of Cleburne, Johnson county; died

November 16, 1892. Dr. Asa W. Pope, of Marshall; died November 3, 1892.

Cost of the Transactions.—Early in May bids were received from two firms for printing the transactions. These bids were the same, viz., $1.00 per volume, with a proportionate charge for any increase of matter over the book of 1891. Details of the publishers' bill are as follows:

525 copies, $1.00 each	$525 00
Cost of illustrations	25 20
Extra composition over volume of 1891	25 35
30 additional copies	30 00
	$605 55
Postage, mailing and delivery	70 00
Total	$675 55
Cost per volume	1 09.5
Cost per volume delivered	1 23
Saving per volume over book of 1891	10
Total saving over book of 1891	55 55
Saving excluding cost of illustrations and extra composition	83 30

The insignificant size of the last volume of transactions was due to the fact that several important sections were unrepresented, either by reports of the respective chairmen or by papers, and that in several instances officers of sections apparently ignored the responsibility of their positions. The record speaks as follows:

Section on Gynecology—Chairman and secretary absent; no substitute; no report; no papers.

Section on Obstetrics, etc.—Chairman present; secretary absent; no report; no papers.

Section on Surgery—Chairman and secretary absent, but the former, Dr. Wilkinson, of Galveston, presented an exhaustive and most admirable report, which, with a few others, redeemed the transactions of 1891 from being a total failure.

Section on Medical Jurisprudence—No report, in consequence of the untimely death of its chairman, Dr. Reeves; the secretary was present; one paper was read.

Section on Opthalmology and Otology—Chairman absent; secretary not a member of the association; no report; no papers.

Committee on Microscopy and Pathology—No report.

Comment upon these facts is unnecessary; they tell their own tale.

A notable feature in the proceedings of the Tyler meeting was the lack of discussion. It is needless to say that free and intelligent discussion of the papers read should constitute the most instructive and interesting part in the transactions of a scientific body like ours. One difficulty heretofore has been in the tardy and incomplete publication of the program. I have made an earnest effort to overcome this evil, and this year, with the active co-operation of officers of sections, a program has been issued some time in advance of the meeting, which, to say the least, is a vast improvement upon the one of last year.

With your permission, I wish to offer the following suggestion, which, in my opinion, will add still further to the interest of our proceedings, viz.: Let the chairmen of the three principal sections, say general medicine, surgery and gynecology, announce the subjects of their respective reports, and appoint certain members to lead in the discussion upon some special division of the subject. This plan has been followed by some of the older and larger societies with eminent success.

I wish again to remind members to kindly notify me in the event of their change of location, and to inform me when the death of any member comes under their notice.

Respectfully submitted,

H. A. WEST, M. D.,
Secretary, and Chairman Publication Committee.

Dr. J. C. Loggins moved that the recommendations contained in the president's message be referred to a special committee.

The motion prevailed, and Dr. T. J. Bell, first vice president, was requested to appoint said committee, which he did, as follows: Drs. J. C. Loggins, P. C. Coleman and A. B. Gardner.

[NOTE—This committee, consisting of members of the judicial council, were subsequently excused and another committee appointed.]

Dr. J. Larendon, treasurer, next read his annual report, which, on motion, was referred to a committee, consisting of Drs. C. H. Wilkinson, R. E. Moss and James Kennedy.

ANNUAL REPORT OF TREASURER.

Dr. J. Larendon, treasurer, in account with the Texas State Medical Association.

RECEIPTS.

1892			
April 23—To cash balance on hand, as per last annual report	$130	41	
April 28—To cash for sale of transactions	6	47	
1893			
May 1—To cash collected from members for dues up to date	1,410	00	—$1,546 88

DISBURSEMENTS.

1892			
April 28—By cash paid to stenographer	$50	00	
April 28—By cash paid H. A. West, for stationery, etc	11	47	
April 28—By cash paid H. A. West, for secretary's salary	200	00	
April 28—By cash paid to publishing committee	300	00	
April 28—By cash paid to J. Larendon, treasurer, salary	150	00	
April 28—By cash paid to treasurer, for postage	10	00	
April 28—By cash paid to H. A. West, for pages, etc.	10	00	
May 16—By cash paid to A. C. Gray, printing for treasurer	2	50	
June 2—By cash paid to treasurer, for extra postage	10	00	
August 31—By cash paid J. W. Burson-Co., for printing transactions	645	55	
November 30—By cash paid for thirty extra copies of transactions, stamps, etc	35	90	
November 30—By cash paid for P. O. order		20	
1893			
April 29—By cash paid for blank book for treasurer		25	
May 1—By cash balance on hand	121	01	—$1,546 88

Respectfully submitted,

J. LARENDON, Treasurer.

HOUSTON, TEXAS, May 1, 1893.

The report of the Committee on Constitution and By-Laws was next called for, but Dr. J. H. Sears, chairman, asked for further time, which was granted.

SECTION WORK.

President Osborn stated that the association would proceed with the regular order of business, and called the Section on General Medicine.

Dr. J. C. Loggins, chairman, and Dr. Clay Johnson, secretary, were present.

Dr. Loggins read his annual report.

Before the work of the section proceeded further, President Osborn called the Judicial Council together. Vacancies being filled, making the Council stand as follows: Drs. P. C. Coleman, S. R. Burroughs, E. L. Menefee, A. B. Gardner, H. H. Darr, Irvin Pope, A. N. Denton, R. E. Moss, W. P. Powell, W. L. York, J. D. Burch, J. C. Loggins.

The work of the Section on General Medicine was then resumed, Dr. T. J. Bell taking the chair.

Dr. H. A. West read a paper on "The Association of Diseases and Morbid Processes."

Meeting adjourned to 2.30 p. m.

FIRST DAY—*Afternoon Session.*

Meeting called to order at 2.45 p. m., Dr. Bell in the chair.

Dr. West's paper was discussed by Dr. Allen J. Smith, and, on motion, was received and referred to the Publishing Committee.

Dr. David Cerna read a paper on "The Action and Uses of Pental," which, after discussion by Dr. J. E. Thomson, was, on motion, received and referred to the Publishing Committee, with a vote of thanks to the author.

Dr. C. H. Wilkinson read a paper on "Concussion of the Spine," which, after discussion by Dr. Allen J. Smith and Dr. James Kennedy, was, on motion, received and referred to the Publishing Committee.

[The Judicial Council organized by electing Dr. P. C. Coleman, chairman, and Dr. J. C. Loggins, secretary.]

The Judicial Council made the following report, which, on motion, was adopted:

To J. D. Osborn, M. D., President Texas State Medical Association: We, the Judicial Council, would report that we have carefully examined the diplomas of the following applicants for membership, and find them regular in all respects, and in possession of the necessary qualifications to make honorable and useful members of the Texas State Medical Association, and would respectfully recommend their admission to membership:

NAME.	POSTOFFICE.	COUNTY.
Shearer J. W	Wallisville	Chambers
Schenk A. H	Kenney	Austin
Hudson S. E	Austin	Travis
Hendrick J. P	Galveston	Galveston
Cerna David	Galveston	Galveston
Powell J. H. E	Smithville	Bastrop
Menefee A. J	Rio Vista	Johnson
Abney J. A	Lampasas	Lampasas
Brown A. N	Richland	Navarro
Keiller Wm	Galveston	Galveston
Thompson Jas. E	Galveston	Galveston
Smith Matthew M	Austin	Travis
Parker G. D	Alvin	Brazoria
Collins W. B	Lovelady	Houston
Barham J. H	Nacogdoches	Nacogdoches
Stuart J. R	Houston	Harris
Gary J. M	Galveston	Galveston
Price J. Sam'l	Beaumont	Jefferson

Dr. J. F. Dean and Dr. A. N. Denton have presented certificates as duly accredited delegates from the Austin District Medical Society.

The resignation of Dr. J. L. Cunningham, of Fort Worth, was accepted.

P. C. COLEMAN, Chairman.

J. C. LOGGINS, Secretary.

Dr. B. F. Brittain read a paper on "The Continued Fevers of Texas Classified," which, after discussion by Drs. West, O'Barr, Irvin Pope, Sears, Schenk and C. F. Paine, was, on motion, received and referred to the Publishing Committee.

The following communication was received and read by the secretary:

GALVESTON, TEXAS, May 2, 1893.

Dr. H. A. West, Secretary State Medical Association—Dear Sir: Permit me, through you, to throw open my soda fountain to the mem-

bers of your association, and to tender them all possible courtesies while they remain in our midst.

Very respectfully,

JUSTUS J. SCHOTT.

Meeting, on motion, adjourned, to resume at 9 o'clock next morning.

Approved: J. D. OSBORN, M. D., President.

H. A. WEST, M. D., Secretary.

SECOND DAY—*Morning Session.*

Meeting called to order by President Osborn at 9.45 o'clock.

Prayer by Rev. Dr. Carter.

The secretary read the following telegram:

TERRELL, TEXAS, May 2, 1893.

The Terrell Medical Society send greetings with best wishes for a successful and harmonious meeting.

J. A. ANTHONY, M. D.,
W. H. MONDAY, M. D.,
W. H. NEELY, M. D.,
Committee.

The following report of the committee on secretary's report was read, and, on motion, adopted, and committee discharged:

We, your committee, find the report of the secretary correct, and heartily endorse the suggestions therein contained.

J. H. SEARS,
C. F. PAINE,
B. F. BRITTAIN.

President Osborn announced that the Committee on Revision of the Constitution and By-Laws were so divided that two reports would be necessary. As the committee consisted of four members, who were equally divided, he would appoint a fifth to aid them in the hope that they might agree upon a report and save time to the association. He named Dr. Bell for the fifth man on the committee.

Dr. Sears suggested that both reports be read to the association, that it might decide for itself which it would adopt.

That being the prevailing sentiment of the meeting, the president ordered both reports read, which the secretary proceeded to do, and pointed out the difference between the two, as follows:

The first point of difference between himself and Dr. Sears was article iii, concerning the eligibility for membership. Dr. Sears would limit applicants to members in good standing of their respective district or county societies. Dr. West contended against such limitation.

Article vii, in regard to the relations and rights of delegates from county societies, was the second one upon which the committee disagreed. The Waco members advocating this article as it stands interpreted by the Judicial Council of the sixteenth session. The Galveston members recommend certain changes by which delegates would become members at the meeting to which they were sent upon payment of the annual dues only.

The third point of disagreement was concerning the duties and powers of the Judicial Council as regards trial and punishment of offenders. Dr. Sears advocating the by-law practically as it now stands. Dr. West contending for certain radical alterations, especially in the matter of giving the association, through its Judicial Council, power to initiate proceedings, regardless of any previous process in the county societies, and providing for no appeal to any other association.

Dr. West proceeded to argue in favor of his report. He was opposed to requiring members to belong to county and district associations. Many sections have no such associations. Societies may be composed of cliques or factions. Good men might have sufficient reasons for not joining such societies. When a man is a regular graduate and is otherwise qualified, he should not be disqualified from entrance into the state association. At the same time it is very important to encourage organization of local societies, and some change should be adopted defining the powers and privileges of delegates of county organizations. The changes he had suggested in article viii would partly accomplish this object. If delegates could become members by the

act of attending the meeting without payment of the initiation fee, then it would be an object to be a delegate. We would find every county society sending as large a delegation as possible, and every year new delegates. In this way the deficiency in revenue from remission of the initiation fee would be more than counterbalanced by an increased membership.

In regard to the trial of offenders against the Code of Ethics, he thought this was a vital point, and that here Dr. Sears' report and the old constitution were defective. There may be reasons why county and district societies might fail to act in such cases. It might be the case of the mice in the fable, who proposed to bell the cat that they might be warned of her approach. All thought the scheme good, but no one offered to put the bell on the cat's neck. The same difficulty may exist in county associations, and for the same reason. Therefore, he upheld the right of the state association to initiate proceedings against offenders, not depending upon prior action by the local organization.

Dr. Sears said he had a high opinion of the medical profession, and thought that every member of the state association should be a gentleman. It is so expected of him. We therefore eliminate everything of a disciplinary character from the constitution so that no case could come into the association. Send them back to the society from which they came. The state association has no time to attend to such matters. We would be nothing but a court of trial if we were to receive these reports from different sections of the state. So we say there shall be no discipline here. We cut out from the Judicial Council's work all that kind of duty, and we leave ourselves at liberty to devote our time and attention mainly to scientific work.

As to the second point, he was opposed to admitting delegates from county and district societies at lower rates than ordinary members. Suppose we send men who never had belonged to this association? If there should be six such men from a society we lose $30, and then what becomes of the funds of the associa-

tion? We propose to limit the association to men who belong to local societies. It costs little to join such societies, and therefore there is no excuse for not joining them.

These are the points on which we differ, and we leave the decision to the association.

Dr. Clark thought the state association ought to have jurisdiction over the conduct of its members. If there was no local society in a district, men might do improper things, and there would be no one to call them to account. He was opposed to admitting delegates from county societies to membership in the association at lower rates than other members. He was also opposed to Dr. Sears' idea of admitting only those who belonged to local societies.

Dr. Christian was opposed to excluding any physician in good standing, whether he belonged to a local society or not. He favored referring disputes to local assemblies, but did not think it wise to divest the association of all jurisdiction. He hoped the association would adopt the report of Drs. West and Paine.

Dr. Rosser thought that Dr. Sears' idea would stimulate growth of local societies, but there are localities where societies do not flourish under any stimulation, hence, he favored Dr. West's idea as to admission to membership. He thought adjudication should be in the hands of the State Medical Association, and not necessarily begin in local societies. In the latter a dispute often becomes a personal matter, often dividing, not only the members of the society, but even their clients. If differences should occur between members of the same society, they might be settled at home, but if the members belonged to different societies, investigation should fall to the state association.

A motion to adopt Dr. West's report being duly made and seconded, Dr. Clopton arose and said he supported Dr. West's report in part and Dr. Sears' in part. To vote for Dr. West's report as a whole would bind the association to all of it, whereas, it might not be all acceptable. He moved that Dr. West's report be voted on by sections.

The president here pointed out that the report had not yet been adopted as the choice of the association.

Dr. West arose and said that he was willing to waive the point about admitting delegates from county and district societies at $5.

A motion was made and seconded to favor Dr. West's report for consideration, which carried by a rising vote.

Dr. Clopton moved to consider the report by sections.

Adopted.

The secretary read:

Article I—Adopted as read.

Article II—Adopted as read.

Article III—Dr. Christian moved to strike out the word "state" from the article, so as to make it possible for an outsider, if he so wished, to become a member of the association.

Dr. Clark seconded the motion.

Lost.

Dr. Allen J. Smith said he agreed with Dr. West as regards the omission of the words "provided they are members in good standing of their respective county or district medical societies," although it might in some degree tend to discourage local organizations. It would be bad policy to undertake to settle difficulties of local medical societies, but he thought if a county or district society should object to an applicant for membership in the state association, the objection should be deemed sufficient reason for rejecting the applicant. He would prevent individuals from joining against whom there is a local objection, and he moved that the words, "provided that within a year no proved objection against the applicant comes from the local society," be added to the section.

Dr. Clark said that the amendment was unnecessary, as all applications came before the Judicial Council, and all objections were heard before the applications were accepted.

Dr. Fisher asked if the action of the Judicial Council was final in regard to admission. Suppose it admitted a member

over the objection of the local society, would its action be final and irrevocable?

The president explained that the report of the Judicial Council comes before the association for adoption, and, if not acceptable, it might be rejected.

Dr. Rosser thought that section No. 3 as read would exclude ladies and admit colored people. He suggested the words "white man or woman" instead of the word "man" in the section.

Dr. Knox asked what races were to be deemed "white" and what "black"?

Dr. Rosser said it was well known what "white" meant, and that it was the intention to exclude negroes.

Dr. Keiller thought learning made all men akin, and that color had nothing to do with it.

Dr. Clopton said the gentleman had not been long enough in the south to appreciate the prejudice which exists in the minds of the southern people against anything like social equality between the whites and negroes. He moved to amend the section so as to read, "every regularly educated physician except negroes eligible to membership in this body."

The amendment was put and carried by almost a unanimous vote.

Section 1 of article iii as amended was adopted.

Articles iv, v and vi were adopted as read.

Article vii, in Secretary West's report, had for—

SECTION 1. County and district societies in affiliation with this association shall be entitled to representation at each meeting of the association upon this basis, to-wit, two delegates for every ten members, and one for each fraction of ten over five.

SEC. 2. Before admission to a seat in this association, each delegate shall produce a certificate of delegation duly signed by the secretary of his society, and pay to the treasurer the annual dues of $5.00.

SEC. 3. Delegates shall have the rights and privileges of members for that meeting of the association to which they are sent.

SEC. 4. Every member of a county society having once entered as a delegate shall thereafter be a permanent member of this association as long as he conforms to its constitution and by-laws.

SEC. 5. Delegates to this association from any other state or national association who shall present certificates of delegation duly signed, shall be entitled to seats and to participate in the scientific business of the association, but shall not be entitled to vote or be required to pay dues.

Section 1 of this article was adopted as read.

Dr. Clark moved to amend section 2 by making delegates pay $5 entrance fee and $5 annual dues, the same as ordinary members.

This amendment was carried, and the section as amended was adopted.

Section 3—Adopted.

Section 4—Was deemed unnecessary.

Section 5—Adopted.

Dr. Clopton moved to adopt the remainder of the report as a whole.

Dr. Gwyn objected to adopting as a whole, as there were parts to which he desired to offer amendments.

Article viii was then adopted as read.

BY-LAWS.

Articles i to viii were adopted as read.

Dr. Gwyn objected to the Nominating Committee as defined by article ix, and moved that that by-law be abolished, and "that nominations be made from the floor of the house, and as many as the association may wish."

Dr. Clark opposed this substitute, saying that it was not customary to so elect officers. He thought by that method members in cities and towns could dominate the elections. He wanted nominations by counties, so as to give the rural districts a show.

Dr. Bell opposed the motion as detrimental to the association, and moved that the old plan of nominating by a committee of one from each county be adhered to.

Dr. Denton was opposed to the existing plan of election. He thought that whatever districts, whether rural or urban, had

the most members should have the most influence in the election of officers. He moved to amend Dr. Gwyn's motion so as make the election be "by ballot."

Dr. Gwyn accepted the amendment.

A motion to table Dr. Gwyn's amended motion was made and lost.

Dr. Sears pointed out that it would take a whole day to elect officers by ballot, and that elections should be secondary to scientific business.

Dr. Bell moved that the by-law in its original form be retained.

Dr. Heard said the association was founded twenty-four years ago, and the method of electing officers had always given satisfaction. He appealed to the meeting to not remove old landmarks.

The question being called for, the chair read out the by-law in its existing form, also, Dr. Gwyn's substitute, and Dr. Bell's motion, which was offered as an amendment to that substitute.

Dr. Gwyn argued that, after a motion to table his resolution was lost, the chair did not have the right to put Dr. Bell's substitute, as it was practically the same thing as the motion to table.

The chair differed from him, and, after much persistent argument on both sides, a motion to sustain the decision of the chair was duly made and adopted.

Dr. Bell's amendment was then voted on and pronounced carried by the chair.

A division was called for, and, on a rising vote, the amendment prevailed, and article ix remained unchanged.

Articles X, XI, XII—Adopted as read.

JUDICIAL COUNCIL.

The sections defining the formation, government, duties and jurisdiction of the Judicial Council were next read from Dr. West's report, and adopted.

Finally, the scientific sections, as defined in same report, were adopted.

The question of leaving out the ordinances and code of ethics from the annual issue of the transactions, on the plea of economy, was then discussed.

Dr. Clark moved to omit ordinances, but to continue code of ethics in the publication.

After brief discussion, the motion prevailed.

The adoption of the constitution and by-laws, as a whole and as amended, was carried.

The following report of the Auditing Committee, on treasurer's report, was read and, on motion, adopted:

Mr. President and Members of the Texas State Medical Association: We, the committee appointed to audit the accounts of your treasurer, beg leave to report that we have carefully examined the same, and find his report correct.

Very respectfully,

ROBT. E. MOSS,
JAMES KENNEDY,
C. H. WILKINSON.

Dr. Brittain reported that he had been applied to, by medical journals from St. Louis and elsewhere, for a copy of his paper, read before the association, and he wished to know whether his refusal to supply them with a copy was the proper course or not.

The president answered, yes, that it was strictly in accordance with a resolution adopted by the association, at its meeting in San Antonio, in 1889.

Dr. West moved that an exception be made in favor of Dr. Cerna's paper, on account of the expense of reproducing the illustrations for the transactions.

Dr. A. J. Smith moved that the same privilege be granted with respect to all papers. He didn't see any good reason why one should hide his light under a bushel.

Dr. Bobo pointed out that the transactions would not be published until about September, and that it was too long to wait for knowledge which might be given out now.

Dr. Van Gasken was quite willing to make an exception in

favor of Dr. Cerna's paper, as it was all about a drug which, from start to finish, was admitted to be no good.

Dr. Keiller supported the resolution, and referred to societies and journals in Edinburgh as doing just what the resolution contemplates.

Dr. Gwyn moved that any member of the association may have his paper back, if he choses.

Motion put and lost.

Dr. West's motion was then put and lost.

Dr. Scott offered the following resolution:

Resolved, That any member of the state association may permit the publication, elsewhere, of his paper, simultaneously with its presentation to this association, provided due acknowledgment be given the Texas State Medical Association.

A motion to table this resolution was made and lost.

The resolution was voted on and prevailed.

Dr. Bell appointed the following committee on president's message: Drs. J. W. McLaughlin, G. W. Christian, C. F. Paine, R. W. Knox, A. C. Walker.

The judicial council brought in the following reports, which, on motion, were adopted:

To J. D. Osborn, M. D., President Texas State Medical Association: The judicial council have carefully examined the diplomas of the following applicants for membership, and find them regular in all respects. We find them in possession of the necessary qualifications to make honorable and useful members of the Texas State Medical Association, and we respectfully recommend their admission to membership as follows:

NAME.	POSTOFFICE.	COUNTY.
Haden Jno. B	Galveston	Galveston
Wall J. E	Carthage	Panola
Flavin Thomas	Galveston	Galveston
Smith Allen J	Galveston	Galveston
Noster C. H	New Braunfels	Comal
Duke F. M	Alvin	Brazoria
Sproule R. M	Wallisville	Chambers

Certificates were presented, admitting to seats as duly accredited delegates, the following named gentlemen: Dr. F. E. Daniel, Austin

District Medical Association; Dr. E. L. Menefee, Hood County Medical and Surgical Society; Dr. B. A. Fowler, Brownwood District Medical Association.

In the matter of the appeal of Dr. J. R. Briggs, of Texas, from the action of the Texas State Medical Association, referred back to the Texas State Medical Association from the American Medical Association, for such action as it may determine. This Judicial Council with due respect to the Judicial Council of the American Medical Association, and, with a full knowledge of all the facts in the case, see no reason why the expulsion of Dr. J. R. Briggs should not stand. The mode of expression was in conformity with our laws and regulations, and his expulsion is approved.

P. C. COLEMAN, Chairman.

J. C. LOGGINS, Secretary.

Adjourned to 2:30 p. m.

SECOND DAY—*Afternoon Session.*

Dr. Bell in the chair.

Medical section work resumed.

Dr. James Kennedy read a paper on "Reconversion of Peptone into Albumen," which, after discussion by Dr. Cerna, was, on motion, received and referred to the Publishing Committee.

Section on Obstetrics and Diseases of Children was next taken up. Dr. Irvin Pope, chairman; Dr. I. E. Clark, acting as secretary.

The chairman read his report, which, on motion, was referred to the Publishing Committee.

The secretary announced the invitation of Mrs. W. Gresham to the members of the State Medical Association and physicians of Galveston to attend a reception at her residence, Fourteenth and Broadway.

Dr. Cooke's paper on the "Influence of Development in Disease," was next called for, but as the author was absent, the next paper on the program, "Paracentisis Capitis in Hydrocephalus," by Dr. N. A. Olive, of Waco, was read, by request, by Dr. I. E. Clark.

On motion, the paper was received and referred to the Publishing Committee, after discussion by Dr. J. E. Thompson.

Dr. Q. C. Smith, of Austin, read a paper on "Placenta Prævia, with New Instruments for Treating Same," which, on motion, was received and referred to the Publishing Committee.

This paper was discussed at some length by Dr. J. F. Y. Paine.

Dr. Keiller made a few remarks.

To both of these gentlemen Dr. Smith replied in a very energetic and slashing style.

Dr. Smith also exhibited a form of bone forceps, which he had found very serviceable, and a periosteum saw made out of an ordinary watch spring, made sharp on one edge and having a handle on each end.

The Section on Obstetrics adjourned, and the Judicial Council made the following report, which, on motion, was adopted:

To J. D. Osborn, M. D., President Texas State Medical Association: The Judicial Council have carefully examined the diplomas and find them, in all respects, regular, and in possession of the necessary qualifications to make useful and honorable members of the Texas State Medical Association, of the following applicants for membership, and recommend their admission to membership, as follows:

NAME.	POSTOFFICE.	COUNTY.
Bever Wm. J	Creek	Houston
Largent J. W	McKinney	Collin
Hale J. W	Waco	McLennan
McAlpine W. A	Galveston	Galveston
Armstrong V. P.	Dallas	Dallas
Farrell A. J	Wharton	Wharton

Also, the certificate of Dr. S. E. Hudson, as a delegate from the Austin District Medical Association, and we recommend that he be so recognized.

P. C. COLEMAN, Chairman.

J. C. LOGGINS, Secretary.

On motion of Dr. Clark, Dr. S. O. Young, of the Galveston News, the second secretary of the state association, was unanimously elected an honorary member.

The secretary read the resignation of Dr. J. M. Litten, of Austin, which, on motion, was referred to Judicial Council.

The Section on Surgery was then opened, the chairman, Dr. A. B. Gardner, giving place to Dr. Loggins, and postponing the reading of his report, in order to allow Dr. J. E. Thompson to read his paper on "Whitehead's Operation for Hæmorrhoids, considered from an Anatomical and Pathological Standpoint."

Dr. Sampson, having a paper on the same subject, entitled, "A Modified Whitehead's Operation for Hæmorrhoids," was invited to read it, so that both might be discussed together.

Dr. Sampson read his paper, and after discussion by Drs. Hadra, C. F. Paine, Brittain and others, both papers were, on motion, received and referred to the Publishing Committee.

Adjourned to 9 o'clock next morning.

Approved: J. D. OSBORN, M. D., President.

H. A. WEST, M. D., Secretary.

THIRD DAY—*Morning Session.*

Meeting called to order by President Osborn at 9.45.

Proceedings opened with prayer by Rev. Dr. Bird.

Reading of minutes of previous day dispensed with, on motion.

Work of Section on Surgery resumed. Dr. Gardner in the chair; Dr. Knox, secretary.

President Osborn announced that as there was more work before the association than it would be able to get through within the limits of its time, the Section on Ophthalmology and Otology would meet at 2.30 in the ladies' parlor, and carry on its work simultaneously with other sections.

Dr. Gardner read his report as chairman of the Section on Surgery.

On motion, it was received and referred to the Publishing Committee.

Dr. J. F. Y. Paine read a paper entitled, "A Case of Splenectomy with Recovery."

After discussion, by Drs. Clay Johnson, Osborn, Pope and

others, the paper was, on motion, received and referred to the Publishing Committee.

Dr. P. C. Coleman read a paper, on "The Treatment of Depressed Fracture of the Skull," which, after discussion by Drs. Hadra and C. A. Smith, was, on motion, received and referred to the Publishing Committee.

Dr. J. E. Prince not being present, a motion to read his paper on "Gunshot Wound of the Chest and Spine," by caption, and refer it to the Publishing Committee, was duly made and carried.

Section adjourned to 2:30 p. m., by order of the president.

The following reports of the Judicial Committee were read by Dr. Coleman, and, on motion, were adopted.

To J. D. Osborn, M. D., President Texas State Medical Association: Your Judicial Council have examined the credentials, and recommend the seating of the following delegates:

Dr. Mat. M. Smith, Austin District Medical Society.

Dr. J. S. Price, Southeast Texas Medical Society.

Dr. A. N. Perkins, Southeast Texas Medical Society.

We have also examined the diplomas of Drs. L. C. Red, Houston; C. T. Hughes, Houston; W. I. Ducie, Galveston, and J. W. Scott, of Houston, and find them, in all respects, regular, and in possession of the necessary qualifications to make honorable and useful members of the Texas State Medical Association. We respectfully recommend their admission as members.

P. C. COLEMAN, Chairman.

J. C. LOGGINS, Secretary.

To J. D. Osborn, M. D., President Texas State Medical Association: The Judicial Council have patiently and thoroughly examined all the written evidence submitted, and heard the testimony of many members from the Western Texas Medical Association, in the case of the difference between that organization and some of its former membership, and find that much irregularity has obtained there in the past, with a spirit of insubordination, individual and organized, that we can not indorse. The communications that have passed between the Western Texas Medical Association and some of its members, and the State Medical Association, have been rude, and calculated to disturb the harmony between professional gentlemen that should dwell together in unity.

On the testimony of creditable witnesses, we would recommend that the Western Texas Medical Association purify itself, even to the ex-

tent of expelling such members as will not observe the code of ethics recognized by this association, then send their delegates to the Texas State Medical Association.

We recommend to them a spirit purification and conciliation, to the extent of unifying the regular profession in San Antonio for the good of legitimate medicine.

The action of the Western Texas Medical Association in the case of Dr. James Kenedy, is hereby approved, but we ask his reinstatement if he tenders to them an apology for discourteous language, and they, the board of censors, to him, for the use of the expression, "ungentlemanly conduct."

P. C. COLEMAN, Chairman.

J. C. LOGGINS, Secretary.

The hour set aside for holding memorial services having arrived, President Osborn called upon Dr. C. M. Rosser to act for the chairman of the Committee on Necrology.

Secretary West was requested to read the list of deceased members for the last twelve months.

Dr. West stated that Dr. J. E. Ward, of Waxahachie, was the only active member who had died since the last meeting of the association.

Dr. Rosser read a memorial notice of Dr. Ward.

It was mentioned that Dr. A. D. Burroughs had also died within the year.

Secretary West explained that in such cases he had to depend on stray notices with which he might happen to meet, and the same was the case with changes of address, and that at the time of his death Dr. Burroughs was not an active member of the association.

Dr. Christian moved that a committee of one be appointed to prepare a suitable notice of Dr. Burroughs.

President Osborn explained that out of four or five deceased members of the profession, only one was in active membership at the time of his death, the others being ex-members, and he added that only those who were active members could be recognized on the necrology list.

A motion was made to make the notice of Dr. Ward, read by Dr. Rosser, a part of the records.

An amendment was offered directing that a copy be sent to his friends, and the motion, so amended, prevailed.

Dr. Christian moved that the record of deaths shall include ex-members who have died within the last twelve months.

Dr. C. F. Paine moved to amend by recognizing ex-members as full members on the necrology list.

Dr. Osborn mentioned the death of Dr. C. C. Francis, of Cleburne, and agreed with the views of Drs. Christian and Paine.

Dr. Christian's motion, as amended, was put and carried.

The following committee was appointed to draft suitable notices of deceased members:

Dr. C. F. Paine, to draft notice of Dr. M. S. Crow.

Dr. J. D. Burch, to draft notice of Dr. J. E. Roach.

Dr. C. A. Smith, to draft notice of Dr. Asa Pope.

J. C. Medical Society, to draft notice of Dr. Francis.

Moved by Dr. Christian, that the reports on necrology present be received and incorporated in our transactions, and those who have not reported be requested by the secretary to report subsequently, and that such reports be also incorporated in the transactions.

Carried.

The Committee on President's Message made the following report, which, on motion, was adopted:

Mr. President and Gentlemen: We, your committee on president's message, beg leave to report that we have carefully examined same, and would respectfully recommend that the message be adopted as a whole, and especially that portion referring to the collection of vital statistics, and we would further recommend that a committee be at once appointed to go to Austin, and, if possible, secure the necessary legislation to put the matter in active operation.

J. W. MCLAUGHLIN,
G. W. CHRISTIAN,
C. F. PAINE,
A. C. WALKER,
R. W. KNOX.

President Osborn directed that the Nominating Committee,

consisting of one member from each county, get together at 4 p. m. Where two or more members from the same county were present, they should proceed to select one of their number to represent them on said committee. In reply to a question, he also stated that medical colleges were entitled to delegates, but not to representation on the Nominating Committee.

Adjourned to 2.30 p. m.

THIRD DAY—*Afternoon Session.*

Meeting called to order at 2.30 by Dr. Gardner, chairman of Section on Surgery, the work of which was resumed.

Dr. Geo. H. Lee read a paper on "The Treatment of Tetanus," which, on motion, was received and referred to the Publishing Committee.

All other papers in this section were, on motion, read by caption and referred to the Publishing Committee.

Section on Surgery adjourned.

President Osborn took the chair and called for the Section on Medical Jurisprudence.

Neither chairman nor secretary of this section being present, it was passed over, and the Section on State Medicine called up.

Dr. C. M. Rosser took the chair, and Dr. I. E. Clark acted as secretary.

The chairman read a paper on "Practical Methods of Sewage Disposal," which was of such a practical and instructive nature that the rule forbidding discussion of the chairman's message was, on motion, waived in this instance.

A very useful and interesting discussion of the paper was followed by a motion that it be given to the press of the state with the request that they publish it and give it the widest circulation possible, which motion was carried unanimously.

A motion to receive and refer the paper to the Publishing Committee also prevailed.

The Judicial Council made the following report, which, on motion, was adopted:

To J. D. Osborn, M. D., President Texas State Medical Association: Your Judicial Council have examined the diploma of Dr. Frank B. King, of Lampasas, and find it, in all respects, regular. We find him in possession of the necessary qualifications to make him an honorable and useful member of the Texas State Medical Association, and recommend his admission to membership.

The credentials of Dr. S. Cunningham, as a delegate from the Austin District Medical Society, are regular, and he is entitled to a seat as such.

We recommend that the resignation of Dr. John M. Litten, of Austin, be received, the same having been tendered because the infirmities of age render him unable to discharge the duties of an active member, and we further recommend that he be elected an honorary member of the Texas State Medical Association.

P. C. COLEMAN, Chairman.

J. C. LOGGINS, Secretary.

The Nominating Committee was now called, as follows, and the committee retired to select officers for the ensuing year:

D. Parker, Robertson county.
A. J. Farrell, Wharton county.
J. D. Osborn, Johnson county.
P. C. Coleman, Mitchell county.
C. F. Paine, Comanche county.
J. E. Morris, Madison county.
W. B. Collins, Houston county.
B. F. Kingsley, Bexar county.
A. N. Denton, Travis county.
J. Van Gasken, Caldwell county.
R. W. Knox, Harris county.
J. C. Loggins, Ellis county.
A. B. Gardner, Austin county.
W. A. Watkins, Kaufman county.
Dan'l Parker, Robertson county.
E. L. Menefee, Hood county.
W. B. Newland, Coryell county.
J. A. Abney, Lampasas county.
A. H. Noster, Comal county.
J. W. Largent, Collin county.
Geo. W. Christian, Burnet county.
C. T. Hughes, Bosque county.
Rosser, by proxy.
C. A. Smith, Smith county.
S. W. Sholars, Orange county.
J. H. Barham, Nacogdoches county.
S. D. Cunningham, Bastrop county.
St. Cloud Cooper, Marion county.
B. A. Fowler, Williamson county.
B. F. Brittain, Callahan county.
W. P. Powell, Montgomery county.
J. H. McDaniel, Leon county.
I. E. Clark, Fayette county.
J. C. Jones, Gonzales county.
R. C. Nettles, Falls county.
J. S. Price, Jefferson county.
C. S. Bobo, Wise county.
W. B. W. Wakins, Navarro county.
W. R. Blailock, McLennan county.
W. B. McKnight, Parker county.
R. P. Tye, Donley county, W. A. Adams, proxy.
W. A. Adams, Tarrant county.
T. F. Oates, Limestone county.
J. W. Shearer, Chambers county.
M. M. Scott, Brown county.
Ed. Randall, Galveston county.

The Section on State Medicine was resumed, and Dr. Cerna was to have read a paper entitled "Some Thoughts on Higher Medical Education and Medical Ethics," but he suggested that as the time was limited and much remained to be done, his paper be read by caption, and, if the meeting so wished, referred to the Publishing Committee.

This, on motion, was done.

The Section on Gynecology was next called up. Dr. J. F. Y. Paine, chairman; Dr. Geo. H. Lee, secretary.

A motion to defer the Section on Gynecology until next day, was made and lost.

Dr. Paine read his report, which, on motion, was received and referred.

By request of Dr. Paine, President Osborn took the chair.

Dr. Hadra read a paper on "The Pathology of the Fourchette," which, on motion, was received and referred.

Dr. Wm. M. Cunningham read a paper on "Cervical and Corporeal Endometritis."

The time for reading the paper having expired before its reading was completed, a motion to permit its completion was made and carried.

A motion to receive and refer also prevailed.

All the remaining papers of this section were, on motion, read by caption, and referred to Publishing Committee.

Section on Gynecology adjourned.

Dr. Gardner moved to reconsider yesterday's motion, permitting publication of papers simultaneously with their presentation to the association, provided credit be given the Texas State Medical Association.

Dr. Denton held that Dr. Gardner, not having voted in the affirmative the day previous, was not competent to make a motion to reconsider.

The chair ruled that the motion would have to be made by some one who, the day before, had voted in the affirmative.

Dr. Rosser stated that he had voted in the affirmative, and had not changed his mind on the matter, but for the sake of

bringing it before the house again, he moved that it be reconsidered.

Dr. Denton pointed out that twice as many members were present the day before, when the resolution referred to was adopted, and that it would hardly be the right thing now to reconsider it when so many had left.

It being ruled that a motion to reconsider was not debatable, the motion was put and lost.

Dr. Knox read the following report of the Nominating Committee, which, on motion, was adopted:

President.....Dr. J. H. Sears, of Waco.
First Vice President.....Dr. C. M. Rosser, of Dallas.
Second Vice President.....Dr. E. M. Rabb, of Hallettsville.
Third Vice President .....Dr. W. A. Watkins, of Kemp.
Secretary.....Dr. H. A. West, of Galveston.
Treasurer .....Dr. J. Larendon, of Houston.
Orator.....Dr. W. R. Blailock, of McGregor.

To Fill Vacancies on the Judicial Council—Dr. R. Rutherford, of Houston; Dr. S. Cunningham, of Bastrop; Dr. W. B. McKnight, of Springtown; Dr. L. Ashton, of Dallas.

Section on Practice of Medicine—Dr. J. C. Jones, of Gonzales, chairman; Dr. I. E. Clark, of Schulenberg, secretary.

Section on Obstetrics and Diseases of Children—Dr. Edward Randall, of Galveston, chairman; Dr. A. B. Gardner, of Bellville, secretary.

Section on Surgery—Dr. C. A. Smith, of Tyler, chairman; Dr. Clay Johnson, of Corsicana, secretary.

Section on Medical Jurisprudence, Etc.—Dr. B. F. Brittain, of Baird, chairman; Dr. C. F. Paine, of Comanche, secretary.

Section on State Medicine, Etc.—Dr. T. J. Bennett, of Austin, chairman; Dr. V. P. Armstrong, of Dallas, secretary.

Section on Gynecology—Dr. G. W. Christian, of Burnet, chairman; Dr. R. W. Knox, of Houston, secretary.

Section on Opthalmology and Otology—Dr. R. H. Chilton, of Dallas, chairman; Dr. T. J. Tyner, of Austin, secretary.

Section on Dermatology, Etc.—Dr. F. E. Daniel, of Austin, chairman; Dr. S. E. Hudson, of Austin, secretary.

Section on Microscopy and Pathology—Dr. Allen J. Smith, of Galveston, chairman; Dr. David Cerna, of Galveston, secretary.

Publication Committee—Dr. H. A. West, of Galveston, chairman; Dr. J. F. Y. Paine, of Galveston; Dr. H. P. Cooke, of Galveston.

Committee on Necrology—Dr. J. W. Carhart, of Lampasas, chairman; Dr. T. D. Wooten, of Austin.

Committee on State Board of Health—Dr. R. M. Swearingen, of Austin, chairman.

Committee of Arrangements—Dr. A. N. Denton, of Austin, chairman.

Delegates not appointed to American Medical Association and Pan-American Medical Council—to make application to the secretary for credentials.

Time and Place of Meeting—Austin, fourth Tuesday in April, 1894.

Dr. J. J. Burroughs took the floor, and said that, owing to the action of the state association in the Briggs case, it would be in contempt with the national association, and that the state association would be only subjecting its delegates to humiliation by sending them to the meeting of the national association. He held that, therefore, no delegates ought to be sent.

Dr. West pointed out that, according to the constitution adopted on Tuesday, the Texas State Medical Association was supreme in deciding who shall be its members.

Dr. Denton said the action of the national association was merely to refer the matter back to the state association, asking that it be reconsidered and dealt with in any way the state association deemed proper.

Here the matter dropped, and the meeting adjourned to 9 a. m. next day.

FOURTH DAY—*Morning Session.*

No minister being present, the meeting opened without prayer, at 9.40.

Reading of minutes called for, but deferred until Judicial Council should complete its report.

Dr. C. F. Paine, for the Committee on Necrology, read a notice of the death of Dr. M. S. Crow.

Dr. Rosser read Dr. C. A. Smith's notice on the death of Dr. Asa W. Pope.

The secretary stated that he had resolutions, adopted by the Johnson County Medical Society, upon the death of Dr. C. C. Francis, and that they would appear as part of the record.

Dr. C. F. Paine, of Comanche, asked to be allowed to read his paper, "Notes on Pheumonia and its Treatment," while the house was waiting for the Judicial Council's report. Leave being granted, he read his paper, which, after extended discussion, was, on motion, received and referred.

The minutes of the three preceding days were read, corrected and adopted.

The Section on Opthalmology and Otology was called, and a motion was made that the report of the chairman and the papers in that section, as reported by its secretary, be read by caption and referred to the Publishing Committee.

The motion prevailed.

The revised report of the Committee on President's Message was read and, on motion, adopted.

The president appointed the following committee to visit Austin, for the purpose of going before the legislature, with a view to securing legislation looking to the collection of vital statistics: Drs. J. W. McLaughlin, F. E. Daniel, A. N. Denton, C. M. Rosser and G. W. Christian.

The president also appointed the following committee on scholarship and medal, in medical college: Drs. J. F. Y. Paine, H. A. West and Ed. Randall.

The Judicial Council reported favorably on the application of Dr. C. C. Barrell, of Galveston, and he was elected a member of the association.

Dr. J. P. Tucker introduced the following resolution, which was adopted:

Resolved, That it is in violation of the code of ethics for a member of this association to associate himself in partnership with an undergraduate, and that any violation of this resolution will be punished by expulsion from this association.

Dr. Christian moved that a vote of thanks be tendered Dr. T. Flavin, for the efficient services he had rendered in reporting the business of the association.

The motion prevailed.

Professor Allen J. Smith spoke of the efforts being made by

the medical college to secure specimens for the college museum, and invited the members of the association to contribute specimens, promising that such specimens would be thankfully received and duly credited to the donors.

The hour having arrived for the induction of the newly elected officers, President Osborn appointed Dr. D. F. Stuart, one of the founders of the association, and Dr. P. C. Coleman, as a committee to escort President-elect Sears to the chair.

Dr. Stuart said:

Mr. President, and Gentlemen of the Texas State Medical Association: In 1869, almost a quarter of a century ago, Dr. Thomas Morris, of Brenham, issued a circular, requesting the physicians of the state to assemble in convention in Houston, for the purpose of organizing a state medical association. Seventeen of us responded to the call. The president-elect was one of the number. He has been a zealous worker, and has attended all of the meetings of the association. It affords me pleasure to present to you Dr. Sears, of Waco. He will conduct you safely through another annual voyage.

Dr. Coleman said:

In behalf of the young men of this association, I do most heartily indorse every word Dr. Stuart has said. Dr. Sears needs no words of commendation from me. Years of faithful service and arduous labor for the good of this association stand for themselves. By instinct, a gentleman; by cultivation, a scientific physician, and, by the holy influences of religion, an humble Christian man. If this combination of forces does not approach as near perfection as poor frail humanity can ever attain, we know not where you will find it.

Dr. Sears, president-elect, said:

Gentlemen of the Texas State Medical Association: I stand before you as the only living member whose name appears at the organization of the Texas State Medical Association, organized on the 15th day of June, 1869, who has never been president (except Dr. J. Larendon, of Houston, so far as I know). In 1873, at the city of Waco, I had the pleasure of inducting my friend, Dr. D. F. Stuart, into this office. I have never sought office, having no aspiration in this direction. This is a case in which the office has sought the man, and not the man the office. My ambition has been to live and die a high private. I have tried to live a blameless life, discharging as best I could the duties I owe to my profession and to this association, to suffering

humanity, to church and state. I have always paid my dues, and in our early days when funds were needed to publish our transactions, I have furnished my quota. It has been my pleasure to work for the elevation of our profession and the advancement of science. I am not certain that you have done me more honor than yourselves by selecting me as your standard bearer for the year. It shall be my pleasure, with your assistance, to discharge the duties of the office to the best of my abilities. I thank you for the honor you have conferred and the confidence you have reposed in me for the coming year.

Drs. Bell and Grammer were appointed a special committee to conduct to the platform the first vice president, Dr. Rosser.

Dr. Bell said it was a pleasure to him to introduce Dr. Rosser, though he felt that an introduction was entirely unnecessary. Dr. Rosser has always been an earnest worker for the association, both in its sessions and at home, and his election as first vice president was no more than a just tribute to his services.

Dr. Rosser said:

In electing Dr. J. H. Sears to the executive office of this association, you have done honor to yourselves; but, in bestowing upon me the second highest office within your gift, you honor me out of all proportion to my deserts, and I assure you of my keenest appreciation. When the recommendations of the retiring president shall have been adopted, it will become an additional duty of the vice-president to arrange for and conduct the examinations requisite before obtaining the scholarships generously awarded by the medical department of the University of Texas, a matter to which I shall be particularly pleased to give attention.

Under the able direction of my superior officer, I anticipate but few responsibilities, but promise him my most hearty co-operation, and hope that, in any emergency that may arise, he will freely command my feeble assistance, and I pledge him my most loyal support.

In behalf of myself, and in behalf of my section of the state, I sincerely thank you for the honor you have conferred, and the generous partiality you have manifested.

Dr. Grammer also made a few appropriate remarks on the genuine worth of Dr. Rosser, and agreed with Dr. Bell, that any honors conferred on the first vice president were no more than his due.

The retiring president, Dr. J. D. Osborn, said:

Mr. President: In turning over to you the presidency of the Texas State Medical Association, I do so with the utmost confidence that under your counsel and administration, the ship will continue on her prosperous voyage, and that this time twelve months you will conduct her into the harbor of safety.

Gentlemen of the association, you have placed me under many obligations to you. No man, in any position, could desire more courtesy than you have always shown me. If any ruling of mine has ever seemed to you to be arbitrary, rest assured it was not my heart, but my head, that was at fault. Next to my wife and babies, I have loved this association, and its welfare has been my constant care. Our membership attendance at this meeting is not as large as I should wish it to be. There may be many causes. One was, possibly, because I was at its head. If so, it is past, and you now go into hands abler and wiser than mine.

I have one regret, that I have not been able to make my administration as glittering with the jewels of literature as many of those that have gone before me. Yet the forthcoming volume of our transactions will prove to be, I think, one of the grandest and best that has ever been issued by this association.

I thank you for the honor you have conferred on me, and I wish to say, in conclusion, to all here present, and to all whom my words may reach, that if I have ever, in act or word, done anything to wound your feelings, I humbly ask for pardon.

Dr. Bell offered the following resolutions of thanks, which were adopted:

Resolved, That the thanks of this association be tendered to the different railroads and hotels, which have extended to our members reduced rates; and to the mayor and citizens of Galveston for courtesies extended to us, and especially to Hon. Walter Q. Gresham and his estimable wife, for the grand entertainment at their magnificent residence, on the evening of the 3d; and to Dr. H. A. West and committee of arrangements, for the splendid program arranged for our entertainment, more especially the grand concert and banquet, at the beautiful Garten Verein, on the evening of the 4th; and also, that our wives and lady friends, who have accompanied us to the Island City, desire through us to tender their sincere thanks to Dr. R. M. Swearingen for the courteous manner in which he entertained them on his little steam tug, Hygeia, on the beautiful Galveston bay.

Resolved, also, that we are truly thankful to the Galveston News and the Houston Post for the perfect and complete report of our proceedings, from day to day.

Resolved, That the secretary of the association be requested to address a special note of thanks to Hon. and Mrs. Walter Q. Gresham, for their magnificent entertainment.

Resolved, That thanks also be tendered to Dr. Schott, for his magnanimous invitation to members of the association and their lady friends to visit his beautiful drug store, and partake, to their hearts' content, of such cooling draughts as is generally known is furnished there.

Dr. West offered the following resolution, indorsing the training school for nurses, established in connection with the John Sealy hospital:

Whereas, The John Sealy Hospital Training School for Nurses, in Galveston, is the only institution of the kind in the state, organized upon a proper basis, with an efficient superintendent, a two years course of theoretical and practical instruction in all the branches of medical, surgical, gynecological and obstetrical nursing,

Resolved, That the Texas State Medical Association commends the wisdom and philanthropy of the noble ladies of Galveston, who have undertaken, in the face of great difficulties and labor, the inauguration of this most important work, and that we will do all in our power to encourage and foster an institution of great value, not only to the medical school and hospital in Galveston, but to the profession and people of the state.

The resolution was adopted.

A motion to adopt the entire series of resolutions of thanks was made and adopted.

A motion to allow Dr. J. D. Burch to withdraw his paper was made and adopted.

It was moved and seconded that Dr. A. J. Smith's paper on "Metastasis in Cancer of the Stomach," and all others not read, be read by caption and referred to the Publishing Committee.

Motion adopted.

A motion to adopt the minutes of this day's meeting, as they appear on the stenographer's report, was made and adopted.

The meeting adjourned, to meet next year at Austin.

Approved: J. D. OSBORN, M. D., Chairman.

H. A. WEST, M. D., Secretary.

PAPERS

READ BEFORE THE

TWENTY-FIFTH ANNUAL MEETING

OF

THE TEXAS STATE MEDICAL ASSOCIATION,

GALVESTON, TEXAS,

May 2nd, 3rd, 4th and 5th, 1893.

SECTION ON PRACTICE OF MEDICINE, MATERIA MEDICA AND PHYSIOLOGY.

REPORT OF CHAIRMAN, J. C. LOGGINS, M. D.,

ENNIS, TEXAS.

GENTLEMEN: For one living, as I do, far in the interior, isolated, or at least distant from any medical center, with the limited observations only to be had in a private practice and such items as can be gathered from current medical literature to serve as a basis for a report on the progress or advances made in the practice of medicine, materia medica and therapeutics, during the past year, you will readily understand that I can not hope to do better than appear stale and uninteresting in what I may say to an audience of medical men who are already familiar with the subjects of which I must speak, and it seems, as it were, only to intensify the monotony of my remarks, that I am left without a single advance to record of such a positive or brilliant character as to command attention and charm the ear of my hearers in its rehearsal by reason of the luster it sheds on the labors of medical investigation. Nevertheless, the year has not been without its advances, and these, too, of such material import as to inspire us with a confident belief that it will mark an era in the history of medical progress equal, in the magnitude of its importance to the public, to that of any similar previous period in the history of our noble profession, replete with the record of brilliant successes won as the just reward of noble, self-sacrificing labor and untiring investigation intelligently prosecuted in behalf of humanity for the purpose of mitigating the evils and alleviating or curing the ills follow-

ing man, as an evil shadow, through life's journey from the cradle to the grave.

The first in importance of these advances, when considered from a utilitarian point of view, will be taken under the head of preventive or state medicine. You can not have failed to note the success (and the public satisfaction as its legitimate result) attending the efforts of our state health officer to abate the outbreak of smallpox, which had developed in many localities and cities of Texas, extending from border to border, and which, with our modern avenues of rapid transit and intimate commercial intercourses, seemed at one time to threaten our people with a wide-spread visitation of this most loathesome disease. By the rigid enforcement of legitimate quarantine in isolating the infected from all contact or intercourse with the unprotected, the public were safely guarded against infection, while they were at the same time warned to avail themselves of the additional protection to be had in proper vaccination. By thus isolating the diseased, the number of cases in the state were limited to those alone who had been exposed in the houses where the infection existed, and by giving to those who had been thus exposed to infection, the prophylactic benefits of vaccination and the advantages of correct sanitary and hygienic surroundings, the percentage of fatality was reduced to a minimum. The percentage of loss being thus reduced to a minimum and the development of the disease confined to those alone who had been exposed before the character of the infection was recognized, had the dual effect to save to our state not only the lives of many of her citizens and to protect the home circle of our people against the grief and gloom of death and to drive away the cloud of despair, with its wailing of orphanage and widowhood, but it was also followed in a reasonably short time by the announcement that there was no longer any smallpox within our borders, as the exposed material in which it could be developed had been exhausted, while the general public were enjoying protection against exposure. Thus the epidemic ended in so short a time that the industry and commerce of the country

did not feel the effect of the invasion. This success of the state health officer, Dr. R. M. Swearingen, in checking smallpox in Texas was followed in close succession by a record of equal success attendant on the efforts of the health authorities of New York in checking the outbreak of cholera developed in the great commercial metropolis of America, and for a time threatening the people of this continent with the horrors of an eastern plague. It would, indeed, be a needless waste of time for me to speak in detail of the methods employed for the dual success of the objects here sought: That of securing to the infected or those exposed to infection or contagion the greatest possible safety from the fatal effects of disease, and the rules and regulations governing their isolation for protecting the public against exposure to infection, since these various methods are public property, well understood by you and of such unquestioned merit and importance as to be no longer subjects of doubt or discussion in the public mind. Furthermore, public confidence in the ability to successfully control the spread of infectious and contagious troubles, is now so firmly fixed in the public mind that the exercise of due diligence for the public safety on the part both of the state and the general government is one of the urgent demands made by the people in such unmistakable language as to assure us that it will receive the official attention needed to make it effective for public protection without needless delay. While this was being done for the protection of the public by those charged with the important duty of guarding the interests of public health, other investigations in the field of science were being prosecuted for public protection against the ravages of disease by those who were actuated to labor by motives of the loftiest character.

W. M. Haffkine, in Pasteur's laboratory, has finally succeeded (so he has announced) in securing protection against cholera by repeated inoculation with attenuated virus. His plan is to make the first inoculation with attenuated virus containing the venom of dead microbes only. The second inoculation is made from living attenuated virus, and the third with

exalted virus. He does not hesitate to say that this vaccination against cholera with the virus of cholera venom is as free from danger to the general health as the vaccination with bovine virus against smallpox now practiced. W. M. Haffkine has inoculated quite a number who were afterward exposed to the disease in its recent epidemic without any one of those inoculated contracting the disease, but the merit of this inoculation has yet to be subjected to the crucial test of a practical trial in a cholera infected district. Till then we must await with patience (not patients) the final verdict as to its value and its safety.

Experiments have been recently instituted in the use of blood serum taken from animals insusceptible to syphilis and injected into the tissues of syphilitic subjects, the effects of which have been such as to encourage the opinion that the human system can be rendered immune to the disease. In like manner immunity against tetanus, diphtheria and pneumonia are considered as fair possibilities from the use subcutaneously of blood serum taken from rabbits, the poisonous properties being first destroyed. The statement has been made that the specific antidotal action of prepared serum from the rabbit has already been successfully demonstrated in the treatment of human beings suffering from pneumonia and tetanus with the most satisfactory results. It is a well known fact that the Japanese are practically immune to scarlet fever, and that it is proposed to take the serum from nations of that country and inject it into the tissues of Caucasians with the expectation of rendering them, when so treated, refractory to scarlet fever infection. Doubtless these experiments in the use of serum from blood refractory to certain diseases will result in some good, even though they should fail to accomplish all that is now claimed.

Those suffering from myxœdema and its varied train of attendant evils are said to have exhibited the most marked improvement when treated with thyroid gland tissue. In this case there is this difference to be noted, that instead of using the juices of the gland subcutaneously the tissues of the gland are prepared and taken as a food. The fact that the same

characteristic evils which distinguish myxœdema have been observed to follow, seemingly as the result of extirpation of the thyroid gland, suggested the idea that the gland or its juices could be successfully used for the cure of these troubles, and experiments conducted on the line of this idea have been crowned with the most happy success. Doubtless the tuberculine treatment inaugurated by Koch, and the subcutaneous injection of testicular juice recommended by Brown-Sequard, have had much to do in stimulating these more recent investigations, and while they have both succeeded only in disappointing the public expectation they had helped so much to buoy with an unreasonable hope, they have possibly served a good purpose by the impetus which they have given to investigations that will likely result in much practical good. I might say something of the advances in materia medica and therapeutics, for they have kept their place in the procession, but it would be only a repetition of that which you have already seen in the current medical journals. Besides, it would be a most flagrant injustice to those who have prepared papers of practical value for your consideration at this meeting, if I were to tax your time longer to their exclusion, unless I could suggest some new thought or discuss profitably some particular subject, a supposition well nigh impossible in such a report, and thus I might only incur the suspicion of being afflicted with *cacoethes scribendi*, the intimation of which would serve to stimulate some enterprising bactereologist to tap me for a specimen to be used for microscopical purposes, that he might thereby have an opportunity of transmitting his name to posterity as one of the distinguished modern benefactors of man by reason of his having discovered a hitherto unknown micro-organism with which to afflict future generations, and to mystify and confuse the medical men of coming ages.

To avoid such dire calamity to our posterity and guard our successors in medicine from confusion, as well as to do justice to our colaborers in the Texas State Medical Association, I feel satisfied you will welcome the end of this report without any formal conclusion.

THE ASSOCIATION OF DISEASES AND MORBID PROCESSES.

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Any one who has had the opportunity of observation in the clinical wards or dead house of a general hospital must have been struck, as I have been, with the multiform and complex pathological conditions frequently met with; and with the further fact that even with the patient upon the post-mortem table, in the hands of a skillful pathologist, with the viscera laid open to inspection, and with the aid of the microscope, it is oftentimes difficult to discover the primary condition, the connection between the different morbid processes, or to allege with certainty the cause of death.

I have thought, therefore, that it would be a subject of interest, and perhaps of profit, to collate some of the more important facts concerning the etiological and functional relations of different diseases and pathological conditions. I can not, in the short time at my disposal upon this occasion, do more than to very briefly discuss some of the more salient points. A volume could be written upon this theme without exhausting it.

Before proceeding in detail, and to illustrate the nature of the complications referred to, let me cite a few cases taken from the record of autopsies made upon patients from my wards in the John Sealy Hospital during the past few months:

CASE I.—John Miller, 53 years of age, laborer; admitted January 23, 1893. Diagnosis, *croupous pneumonia*. Died February 9. Cause of death, *acute pericarditis*. Pathological diagnosis, croupous pneumonia in posterior part of lower lobe of right lung; passive hyperaemia and brown induration of both lungs; right-sided hypertrophy of heart; chronic myocarditis; aorta atheromatous above the aortic valves; pos-

terior coronary artery almost obliterated by atheromatous placques; the anterior coronary artery converted into a firm calcified tube for at least one inch; the aorta presented calcarious plates at different points throughout its extent; the liver was mottled from fatty infiltration and congestion; the kidneys and other organs showed no positive evidence of disease.

This case presented the history and clinical picture of an ordinary uncomplicated croupous pneumonia; the pulse, however, giving from the beginning, evidence of cardiac weakness. The crisis took place about the seventh day, was followed by rapid resolution and amelioration of all the symptoms until about February 5, when increased dyspnœa, pain, a sense of oppression over the cardiac area, increased weakness and rapidity of the pulse and well marked pericardial friction rales, indicated an acute pericarditis.

Reviewing this case several interesting questions are suggested. First—Did the passive pulmonary hyperæmia, resulting from a dilated and weakened right ventricle, predispose to the occurrence of pneumonia? Second—What was the connection between the chronic myocarditis and the acute pericarditis? Third—What was the relation, etiologically, between the croupous pneumonia and the pericarditis? Did the latter result from an invasion of the pericardium by the *diplococcus pneumoniæ*, or did it result from mere continuity of structure? Fourth—To what extent did the chronic myocarditis and the antecedent arterio-sclerosis contribute as the immediate cause of death by weakening the action of the heart? Fifth—Does not arterio-sclerosis, with its frequent accompanying contracted kidney, largely account for the heavy mortality in the croupous pneumonia of old age and chronic alcoholism?

CASE II.—A. Bolston, aged 21; native of France; admitted November 15, 1892; died January 23, 1893. Clinical diagnosis: *Ulcerative endocarditis* and *gall stones*. Pathological findings: Intestinal ulceration, gall stones, glandular suppuration in mesentery, infarctions of spleen, hepatic cirrhosis and fatty degeneration, fatty kidneys, chronic pleurisy, œdema of lungs, chronic myocarditis, splenification of bone marrow.

Here was presented a series of morbid processes as perplexing and incomprehensible as were the clinical phenomena shown during life. When the patient entered the hospital the symptoms pointed to cholelithiasis, of which there were several attacks. The skin, however, remained jaundiced, showing the discoloration, due to a mixture of icterus and excessive anæmia. A slow pulse supervened, and an aortic diastolic murmur became audible, followed by œdema of the legs and lungs. There was extreme dyspnœa, and during the last few weeks there had occurred several attacks of partial hemiplegia, with aphasia.

I shall not dwell upon the reasons which led me to believe that there was an ulcerative endocarditis; suffice it to say, that my diagnosis was based chiefly on the development of a heart murmur, dyspnœa, dropsy, irregular fever, excessive anæmia, and cerebral symptoms, apparently due to embolism. Was this a case of typhoid fever? Was pernicious anæmia the original trouble? The autopsy failed to answer these questions, or explain many of the phenomena during life. Careful section of the brain showed no causes for the hemiplegic attacks.

CASE III.—Old colored woman (?). At the post mortem the following lesions were found: Chronic interstitial nephritis; cardiac hypertrophy, with right sided dilatation; induration and œdema of the lungs; cirrhosis and venous engorgement of the liver; cirrhosis of the spleen; elongated cervix uteri; fibroids of uterus; pelvic peritonitis.

The pathological sequences are here more explicable. Undoubtedly the kidney was primarily involved, the cardiac hypertrophy following, as is usually the case. The other viscera, excepting the pelvic ones, became affected in consequence of circulatory disturbances.

The citation of these cases is sufficient to warrant a discussion of my subject. The association of diseases and morbid processes may admit of the following classification, under which the subject may be presented:

1. Those diseases associated as a result of a common predisposing cause: *e. g.*, famine, filth, and other unhygienic conditions.

2. Diseases arising from the localization of specific infectious agents.

3. Diseased conditions resulting from disturbances of one function interfering with the performance of another.

4. Disorders arising from impairment of function promoting extraneous causes.

5. Morbid local conditions favoring the lodgement of infectious agents.

6. Morbid general conditions acquired which act by affording a suitable soil for the development of diseased processes.

7. Inherited constitutional predisposition to different diseases having a similar character.

8. Certain extrinsic agents produtive of inflammatory and degenerative processes in different organs and tissues.

9. Toxic products originating in the body and producing similar effects and association of morbid processes, as the above.

10. Uncertain associations not included above.

This classification, though incomplete, will answer the purpose of the present discussion.

In the frequent concurrence of epidemics of typhus and relapsing fevers we have an illustration of the effects of a common predisposing cause. The reduction of individual and community vitality resulting from famine, filth, destitution and overcrowding, added to intemperance, overwork and depressing emotions, diminishes the resisting power of the system and largely contributes to the spread of these diseases. Although each one of these affections has its specific micro-organism which is essential to its production, yet the above mentioned factors, predisposing to both, will account for mixed epidemics.

With regard to typhoid fever such influences do not seem to exert any special predisposing effect, and hence we find this malady affecting all classes of a community, invading with impartiality the hovel of the poor and the palace of the rich.

In the occasional simultaneous prevalence of cholera and yellow fever, in the frequent association of yellow fever, dysentery, and malarial fever, we have other illustrations, of the influence

of a common predisposing cause, and an explanation of the fact that many prominent writers, forty years ago, strongly contended against the specific nature of such diseases, and in favor of their common origin and convertibility.

Now we know that such association is dependent upon a widespread disobedience of sanitary laws. The following are instances of the association of morbid processes from the localization of infectious agents: 1, Croupous pneumonia in *typhoid fever;* 2, croupous and catarrhal pneumonia, and nephritis in *typhus fever;* 3, diphtheroid angina, meningitis, pleurisy, and arthritis in *scarlet fever;* 4, croupous pneumonia in *cerebro spinal fever;* 5, bronchitis and catarrhal pneumonia in *measles;* 6, croupous and catarrhal pneumonia in *epidemic influenza;* 7, orchitis in *mumps;* 8, catarrhal pneumonia in *whooping cough;* 9, catarrhal pneumonia, and nephritis in *diphtheria;* 10, diffuse bronchitis, lobular and croupous pneumonia, and pleurisy in *smallpox;* 11, abscess of the liver in *amœbic dysentery;* 12, diffuse nephritis in *yellow fever.*

It is difficult, in many cases, to determine the cause and the relations of complications, as, for example, the croupous pneumonia occurring in typhoid fever. Generally, pulmonary affections, diffuse bronchitis, catarrhal and croupous pneumonia are not a direct result of the typhoid infection, but are due to other causes, as hypostatic congestion, imperfect expectoration, inhalation of irritants, cardiac weakness, etc. But we do have a pneumonia, taking place as a localized infection, as is clearly stated by Pepper,[1] in his recent article upon typhoid fever: "Occasionally the disease *(typhoid fever)* begins with a chill, and the symptoms of croupous pneumonia, and there may be nothing to justify the diagnosis of any other disease than this, until after a week or more, when, the failure of a crisis to occur, the development of rose-colored spots, and of intestinal symptoms, and the general typhoid condition of the patient, may show that the pneumonia was but an early complication of a

1 An American text book of the Theory and Practice of Medicine. Vol. I., p. 98. 1893.

general infectious disease. In some cases, it may remain throughout impossible to determine whether we have to do with a typhoid pneumonia; *i. e.*, with a pneumonia with typhoid symptoms, or with a true typhoid fever, with initial and predominating pneumonic symptoms and localization."

The above list is illustrative only, but is sufficient to show that an important part in pathology is played by the localization of infectious agents, especially upon the lungs and kidneys, and how important it is to watch these organs in all of the acute infectious diseases.

Let us turn now to diseased conditions from disturbances of one function interfering with the performance of another. Embraced in this category are many morbid conditions whose connections are clearly defined. I can only enumerate the most common. First—Disturbances of the circulation depending upon organic heart disease resulting in passive hyperæmia, impaired function and inflammation of the viscera. Here is an explanation of the fact so frequently observed that cardiac diseases are usually announced by symptoms indicative of disease of some other organ: Dyspnœa, cough, profuse expectoration, possibly hæmoptysis, diffuse bronchitis, brown induration of the lungs, depending upon long continued pulmonary venous congestion. Secondly—Disturbances of digestion from passive hyperæmia of the stomach, intestines and liver. Thirdly—Diminished amount of urine, dark in color, concentrated, highly acid, of a high specific gravity, slightly albuminous, depending upon passive congestion of the kidneys. Fourthly—Mental disturbances, impaired intellectual activity, stupor, drowsiness from cerebral hyperæmia; these varied phenomena depending upon one central cause, viz: A valvular disease of the heart. Further illustration of the interaction of deranged function are observed in diseases of the stomach. "Absorption, movement and secretion of this organ have an interchangeable connection, and are, moreover, closely related with disordered conditions of the intestines and liver. And, *vice versa*, every disorder of the latter is reflected upon the former, as for example when the stomach

contents are abnormally acid, or the organ contains much undigested food. In the latter instance the chyme will act upon the intestines as an irritant, especially upon the upper part of the duodenum, swelling the orifice of the common bile duct, as a consequence of which the flow of bile is retarded, and the portal blood contaminated with the products of an incomplete digestion, slows the hepatic circulation, and, on the other hand, the biliary secretion is interfered with. A similar sequence of events occur when the liver or the intestinal tract is primarily involved. Under such circumstances, we have to deal not only with resistance to the expulsion of chyme from the stomach by an overloaded intestine, and the backward peristaltic wave affecting the peristalsis of the stomach, but still farther reaching are the results of venous stasis affecting the entire portal system, including the stomach." Thus we have so frequently associated gastric catarrh, jaundice, intestinal catarrh, constipation and diarrhœa. Various other illustrations could be given of the mutual interaction of deranged functions, but these, I think, are sufficient.

Now, as to the impairment of function promotive of extraneous causes. Illustrating the mechanism of such influences tending to produce serious complications, we have the frequent occurrence of diffuse bronchitis, catarrhal and croupous pneumonia from imperfect respiration, expectoration and deglutition. The conditions favorable to the imperfect performance of these functions are present to a greater or less degree in every disease characterized by that ensemble of symptoms known as the *typhoid state*. The circulation in the blood of fever toxines obtunding the sensibility of the brain, causes the patient to lie stupidly upon his back, with feeble inspiratory efforts and imperfect expectoration; to inhale inflammatory agents from the mouth and throat, and to swallow the wrong way irritants of various kinds, particles of food, foul and decomposing secretions, etc. And when to these factors we add an impaired pulmonary circulation from a weakened heart, and hypostatic congestion from a continuous dorsal decubitus, is it any wonder

that in typhus, typhoid fever, remittent, cerebro spinal fever, smallpox and other diseases of like character, we have serious pulmonary complications taking place as a natural and, in many intances, unavoidable sequence?

In regard to morbid local conditions favoring lodgment of infectious agents, such conditions are chiefly inflammatory and affect mainly mucous membranes. These catarrhal inflammations are of special interest from the fact that by timely curative and preventive measures the onset of a much more serious malady may often be obviated. The association of tuberculous and catarrhal processes of the air passages was for a long time incorrectly interpreted; it was thought that such diseases as measles and whooping cough were converted into tuberculosis. We now know that the inflammatory conditions of the mucous membranes of the air passages, occurring in these two infectious disorders as well as in laryngitis, pharyngitis, bronchitis, tonsillitis, catarrhal and croupous pneumonia, act as predisposing causes of tuberculosis by affording a suitable place for the lodgment and development of the tubercle bacillus. In this way gastro-intestinal catarrh favors the action of the specific causes of typhoid fever, cholera and dysentery. In a similar manner catarrhal processes about the throat, tonsillitis, laryingitis and pharyngitis, favor the likelihood of diphtheritic infection. Such instances could be multiplied, but let these suffice.

Concerning morbid general conditions, acting by reducing the resisting power and affording a suitable soil, we have an impairment of vitality, resulting from some severe acute diseases, such as pneumonia, epidemic influenza, typhoid fever, and also from various unhygienic influences, insufficient food, overcrowding, uncleanliness, alcoholism. Individuals, who have been subjected to such influences, easily become the victims of tuberculosis simply because a suitable soil has been provided for the lodgment and development of the infectious agent.

In regard to inherited constitutional predisposition to different diseases, having a similar character, we have an illustration of how an inherited constitutional weakness may predispose to the

association of diverse disorders, as, for example, in connection with syphilitic, scrofulous and tubercular processes. Thus, a child with inherited syphilis becomes, from the resulting cachexia, as well as from the local inflammatory conditions, a favorable subject for the development of tuberculosis. Again, a child, the subject of scrofula or tubercular adenitis, is liable to develop an intestinal, meningeal, or pulmonary tuberculosis. We have a similar illustration, shown in the children of gouty parents, who, instead of inheriting gout, may have an inherent predisposition to lithæmia, weak digestive powers, and, possibly, diabetes. In certain nervous disorders we observe similar connections. Instead of inheriting the particular nervous malady, from which his parent suffered, the child inherits a neuropathic constitution; and, hence, we notice the association of insanity, epilepsy, hysteria, migraine, alcoholism and the like.

As to extrinsic agents, productive of inflammatory and degenerative processes in different organs and tissues, we have certain chemico-toxic and infectious agents, which, though differing entirely in chemical constitution, produce similar pathological results, acting either in the process of elimination on certain organs, or having an affinity for certain tissues, in which case they produce their effects through the circulation. Familiar examples of such agents are lead, alcohol and the syphilitic poison. Thus we find these three lethal substances playing an important role in the etiology of a large class of chronic inflammatory and degenerative processes, as, for example, chronic endocarditis, arterio sclerosis, chronic parenchymatous nephritis, contracted kidney, cirrhosis of the liver, gout, multiple neuritis and chronic system degenerations, and inflammations of the spinal cord, such as chronic myelitis and locomotor ataxia. From the common origin of such diseases, we often see them associated as arterio sclerosis, with chronic endocarditis and interstitial nephritis, contracted kidney with cirrhosis of the liver, gout with interstitial nephritis, cirrhosis of the liver with multiple neuritis, valvular heart disease with locomotor ataxia. In many instances several of these etiological factors unite to

produce a given disease, and it is often difficult to assign to each its proportionate share.

There are certain irritative substances produced within the body which act in a similar way, and produce morbid changes of like character as those mentioned in the last clause. We have, for example, frequently associated a chronic endocarditis and Bright's disease, or contracted kidney with cirrhosis of the liver, etc., where we can exclude any of the extrinsic agents above mentioned, and must assume the presence in the blood of some irritant which in the process of excretion or otherwise will produce inflammatory and dagenerative changes. Our knowledge of the ultimate phases of digestion and assimilation is as yet too imperfect for us to say with certainty what is the chemical constitution of such agents in all cases; but of this fact we are assured, that is that some derangement in the metabolism of nutrition, depending upon an excess of certain articles of food, especially the albuminoids, together with defective oxidation from insufficient exercise, plays an important role in the etiology and association of diseases such as gout, diabetes mellitus, interstitial and chronic parenchymotous nephritis, chronic endocorditis and cirrhosis of the liver.

There are, again, certain diseases frequently found to coexist not explicable in the before mentioned categories. I refer especially to cardiac and kidney diseases. The association of heart and kidney disorders has been a matter of common observation for a long time. It did not escape the notice of Richard Bright, who commented upon its causes more than half a century ago. The connection between morbid conditions of these two organs is manifest in many instances; for example, where the heart is primarily affected, and we have then the kidney of passive congestion, or where we have embolic processes in the kidney originating from an endocarditis, or further yet, when we have disease of both organs resulting from a common cause, as arterio-sclerosis, where an hypertrophy of the left ventricle occurs as a sequence of obstruction offered by diseased arterial walls, and, still further, where the kidneys suffer

from impaired nutrition, affecting primarily the secreting cells. The pathological sequence in such cases are readily understood, but what is the explanation of the large number of cases where the kidneys are the organs primarily involved and where there is no arterio-cappillary fibrosis?

I can not here enter into details concerning the various theories which have been advanced to account for this connection; the truth is found probably in no exclusive theory, but rather in a combination of them all. Thus we can conceive how an altered constitution of the blood depending not only upon an accumulation in it of excrementitious products, but from the loss of albumen also, would offer an obstruction to the circulation and be followed by a compensatory hypertrophy. And we can understand that there is an element of truth in Traube's mechanical theory; for in many cases in consequence of deficient elimination of water there is an overfullness of the vascular system which might occasion an hypertrophy. These two would not exclude the theory offered by Dr. Tyson, viz.: That the process is compensating and another instance of nature's method of supplying the deficiences of one function by increased action of another. In this case a certain number of the secreting cells of the kidney having been destroyed, the heart, by increased action and consequent hypertrophy, sends the blood coursing through the kidneys under stronger pressure with the effect of increasing the amount of urine, and thus compensating for the loss of renal tissue.

In conclusion let me briefly mention the principle facts relating to the connection between arterio-sclerosis, cardiac and kidney disease with cerebral hemorrhage and embolism. In almost every instance hemorrhage of the brain is due to the rupture of miliary aneurisms, and later investigations go to show that this disease of the vessel wall is identical with arterio-sclerosis. The etiological factors also predisposing to cerebral hemorrhage are those which are contributary to atheromatous degeneration of the arterial walls. We have several other factors explaining the frequent association of cardiac and renal

disease with rupture of blood vessels in the brain, as for example, passive congestion from valvular disturbances of the circulation and weakened heart action impairing nutrition of the arterial walls, to which must be added the increased liability to rupture from strain due to a general arterial tension, the latter being an almost invariable accompaniment of interstitial nephritis and the hypertrophied heart connected with it. Hence we find hemorrhages of the brain productive of either mild or severe hemiplegic attacks or directly causing death in many cases of contracted kidney.

The rationale of cerebral embolism and thrombosis in connection with heart disease admits of easy explanation. We have frequently occurring thrombotic deposits upon the mitral or aortic valves, from chronic or ulcerative endocarditis, which are often washed off and lodge as emboli in one of the cerebral arteries; thrombosis is favored also by arterio-sclerosis through the roughening of the inner coat, inelasticity and occasional narrowing of the arteries. We may thus have clots forming in the aorta or arteries at the base of the brain from whence they are carried into the smaller arteries as emboli.

DISCUSSION ON DR. WEST'S PAPER.

By DR. ALLEN J. SMITH: Said he had not an opportunity to hear Dr. West's paper, but he had looked over it, and had a few remarks to make on the subject. As one who had much to do with post mortems, he had frequent occasion to notice a multiplicity of diseased processes where only a single one manifested itself in life. The arrangement of cases in which complexity of structural alteration should be met with would cover more ground than he could discuss. He would consider complexity of cause and complexity of body. The patient may have an inherently weak spot, which may become the starting point of a disease, or on which the disease, if already established, may readily react, and thus find its way to other structures than the one originally attacked. Typhoid fever, for example, besides its own constitutional effects, reacts specially on the whole alimentary canal and is nearly always accompanied by a variety of diseased processes. Pneumonia, again, may result from various ætiological factors and be followed by

alterations in liver, spleen, heart, and kidneys. He compared the human body to a machine. One cog, or one wheel, being defective, will produce alteration of function, or of action, in other parts. So in the liver; for example: obstruction to portal flow produces effects on other organs of abdomen and pelvis; the spleen changes; it begins to contract and become sclerotic; the stomach becomes engorged; the intestinal wall congested, and intestinal and gastric secretions become defective. Catarrhal processes set up and weaken some spot, which, then, becomes susceptible to organisms of typhoid fever. The heart becomes hypertrophied, owing to efforts to keep up circulation. Athcromatous processes are set up; dilatations and aneurisms result. Hence the complexity of pathological lesions, resulting from one original cause. The micro-organisms of dysentery open up a field for the lodgment of other micro-organisms. Resisting power of the entire body becomes lowered; absesses may form; hyperæmia proceeds to inflammation; hypostatic congestion may show itself in lung; myelitis in cord, and so on. The rule is, then, a multiplicity of lesions, resulting from complexity of cause operating on complexity of structure and function.

The study of pathological processes is the study of effects already produced. Pathological physiology was more important, because precedent to pathological processes.

SPINAL CONCUSSION.

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GALVESTON.

MR. CHAIRMAN AND GENTLEMEN: In presenting the subject which I have selected for your consideration, I am fully conscious that it is one which is yet undergoing evolution in the minds of our professional brethren, and therefore, one which might be termed too immature to be offered to a convention composed of gentlemen who are accustomed to deal with old and established pathologies, with actual and not chimerical conditions of disease and health.

I am well aware that, hitherto, this field has been regarded as the common property of anyone who chose to invade it; the surgeon, the alienist and the general practitioner of medicine enjoying its domain together. Nor am I unmindful of the fact that a multitude of conflicting opinions are entertained, not only upon the nature, but even upon the actual existence of this condition of the human system. From the fact that spinal concussion is becoming more prominent in the minds of our profession every day, and that at almost any moment our physicians might be called upon to consider it from a legal as well as from a medical standpoint, and for the further purpose of considering its semeiology and nature, and to dissever it from other morbid conditions of the spine erroneously classified under the heading of this disease, am I induced to place this subject before you at the present meeting.

By concussion of the spine, I do not wish to include the many different pathological conditions which this portion of the body may be subjected to through the agency of traumatism, but I only intend to consider that morbid state of the nervous system

following an injury to the back, unattended by a visible lesion and undemonstrable except through the agency of subjective symptoms. To be more precise, I propose to present for your consideration that condition known as, but improperly designated "railway spine," or concussion of the vertebral column following railway accidents.

It is well to understand in the beginning, that there is nothing *special* in the nature of a railway concussion of the spine, except perhaps, as we may see further on, in its remote possibilities.

A person falling from a scaffold, or into the hold of a ship, may suffer from the very same effects as one does who may have been injured in a railway wreck. Each might be stunned at the moment of the accident and develop the very same train of symptoms in the course of a few weeks afterwards, but it would be absurd to call one a case of scaffold or ship-hold, and the other a case of railway spine. Yet this latter term is so often applied to railway injuries as to suggest the belief that there is not only something special, but even something very intractable in the nature of such injuries. Erichsen himself, the father of the expression, distinctly states that there is nothing special in the nature of such concussions, but it is owing to the great momentum of a moving train of cars coming suddenly to a stop, that the peculiar severity of such cases is attributable. Now, if there could be a more sudden arrest of momentum, or a greater shock to the spine, than that experienced by a person falling through an open hatchway, a distance of twenty or more feet, and alighting on his back, then the writer fails to appreciate it. Yet the latter accidents often occur here in Galveston, and are as a rule unattended by any inflammatory or psychical reaction, while the victim of a railway accident, though he may have received no physical injury whatever, immediately or soon afterwards becomes an invalid for months or even years.

Any severe injury to the back may occasion fracture or dislocation of one or more bones of the vertebral column, or a rupture of a blood vessel may occur in the cavity of the spinal

canal as a result of such injury, each lesion producing pressure upon the cord with inflammatory and paralytic symptons following; or there might be simply bruising of the muscles of the back, or a wrenching of the ligaments holding the vertebræ together (spinal sprain). All of these conditions, however, are demonstrable lesions of the parts affected, and should never be classified as illustrative of concussions of the spine.

True, concussion might, and probably would co-exist with the foregoing injuries, but being an entirely different affair, should never be confounded with such lesions. And right here I would limit the term, and it is eminently proper to so limit the definition of concussion of the spine to be the shock, thrill, stun or impulse communicated to the spinal marrow in falls or other injuries received by persons.

Bastian's description of spinal shock is so clear, concise and appropriate to the subject under consideration, that I will quote his few lines in confirmation of the point I herein maintain. Says he:

"In the great majority of such cases no complete paralysis is induced, even at first. There may at most be paresis of one or more limbs, general prostration, nausea with occasional vomiting, a rapid and possibly irregular pulse, with occasional startings or twitchings of the limbs, whose sensibility may be diminished, exalted or unaffected. The temperature may probably be at first depressed as a result of the shock, though subsequently a febrile elevation may continue for some days. In regard to micturition, there may either be some delay or difficulty or an irritability of the bladder. With this there is general restlessness, nervousness and insomnia. In some cases even without any appreciable lesion the shock to the system may be more profound, and there may be paralysis of limb lasting perhaps for some days, and then rather suddenly disappearing."—*H. C. Bastion* (in Quain's Dict., Vol. 2.)

From the foregoing, therefore, it would appear that concussion was a transient affair, a temporary stun or commotion imparted to the spinal marrow (as in fact it really is) and that in

a few days at most it is over or else followed by its diseased consequences. But you will say it is a well-known fact, that often in case of a railway accident there is a train of morbid symptoms set up weeks or even months after the reception of an injury, "such symptoms being clearly undemonstrable, but nevertheless indicative of an actual disease." To such a statement I will reply by saying that such indeed is the case, and that this condition is exactly the disease I am here describing; at the same time there are symptoms of injury clearly associated with lesions that are demonstrable, such as meningitis, etc., while in a third class there are cases which present a classical array of all the subjectives mentioned by Erichsen himself, and which are nevertheless founded upon no disease whatever. I propose to include the former class just alluded to, and excluding fractures, dislocations, hemorrhages, sprains, contusions and the like, will proceed to enumerate those symptoms which belong to shock. And in doing this I will quote Mr. Erichsen, since he is looked upon as the standard authority in such diseases; at the same time I take exceptions to his manner of commingling symptoms which belong to concussion with those which appertain to other disorders of the spine.

In offering the following symptoms, I do not yield the position assumed, that concussion is of short duration, and, unless speedily fatal, is entirely over in the course of a few days, at most, but I follow the author in his conglomeration of shock, and its remote consequences under the one heading, simply for the sake of convenience, and because it is fashionable to do so.

SYMPTOMOTOLOGY.

"After the immediate effects of the accident have passed away," says Erichsen, "there is a period of comparative ease and remission of the symptoms, during which the patient imagines that he will speedily recover his health and strength. This period may last several weeks, possibly for two or three months. It will be found, however, that, during this period, the patient has never enjoyed an interval of complete health.

He has lost bodily energy, mental capacity and business aptitude. He looks ill and worn; often becomes irritable and easily fatigued. After a lapse of several months, from three to six, the patient will find that he is steadily becoming worse. The countenance becomes pallid, sometimes livid, and has a careworn expression. His thoughts are confused; he can not concentrate his ideas, nor connect his reasoning. His sleep is disturbed, restless and broken. Unnatural noises, buzzing, ringing, etc., are felt in his head, while vision, hearing, taste and smell become defective. The sense of touch deteriorates, and the patient is unable to pick up small objects, when directed to do so. The attitude becomes stiff and unbending; the patient holds himself erect, and usually walks straight forward, as though afraid to bend or turn his body. There is complaint of pain on moving the head, especially on rotating it; in fact, almost any bodily movement occasions pain, so that he moves around as little as possible. Upon examination the spine will be found tender in many places, so that a slight pressure will become unbearable, and on this account he will be unable to stoop down to pick up any object from the floor, without dropping on one or both knees in order to do so. The gait, especially, is peculiar, the patient walking unsteady, usually employing a stick to help him, and keeps his feet apart in order to steady himself. There is also difficulty in going up or down stairs, nor can he walk any great distance (as half a mile) without a rest. The sensation as if a cord was tied around his waist is often felt, and spasms, of the diaphragm, is sometimes very distressing. The nervous power of the limbs will be found defective, often unequally so, and both motion and sensation will be found impaired, while numbness, or hot and cold flushes, will be experienced on one or both extremities. The body, generally, loses weight, though the muscles may apparently retain their normal size and shape. The functions of the genito urinary apparatus rarely becomes deranged, though the sexual appetite is invariably lessened. The pulse, in the beginning, is usually slow, but in an advanced stage it ranges from 90 to 100."

Such, then, is a brief resume of the usual symptoms found in spinal concussion, as detailed by Erichsen. But it is clear to me that this author has blended symptoms which belong to meningitis, myelitis, etc., with those which pertain to shock. The girdle and spastic signs just related are well known evidences of morbid changes in the marrow and its membranes, and should be charged to those diseases, while the "subjectives" he first mentions should be assigned to the disorder under consideration.

PATHOLOGY.

The nature of spinal concussion is less easily described than its semeiology, and upon this point authorities appear to be at sea. Leaving out the consideration of the grosser lesions of the spine from accidents, such as myelitis, meningitis, hæmorrhages, and the like, we have left only the purely psycological and pathologically undemonstrable conditions to deal with. Such are spinal concussion and traumatic hysteria, both of which, though based on an injury, correctly speaking, should be eliminated from the field of surgery and relegated to the province of general medicine, where they belong.

Seguin briefly, but succinctly, describes this malady in the "Annuals" for 1891. Says he:

"Whilst the majority of such cases result from violent shock received by victims of railway accidents, it is equally true that there is nothing specific in such accidents, and that the same train of symptoms may be produced by any accident causing shock and fright combined. The reader, who has had much experience in neurological practice, will recognize an astonishing similarity, if not identity, with a large group of non-traumatic cases, which annoy the physicians so much by their vagueness, their subjectivity and their incurability. We acknowledge that we do not understand the pathology of such cases which we classify as hypochondriacal, hysterical, or even delusional."

Clevenger, in his monograph, advances the idea that the

pathology of spinal concussion is to be found in a definite lesion of the prevertebral sympathetic ganglia of nerves. His reasoning to this effect is very ingenious, and urges that in future, should opportunities present themselves for autopsies upon such cases, those ganglia should be dissected out, and their morbid anatomy carefully studied. (Clevenger, page 319.)

Oppenheim, who formerly believed in Erichsen's meningo-myelitic theory of such cases, now declares that the brain is the organ impressed, and that we have a traumatic hysteria in all cases of spinal concussion. In my opinion all evidence points to a disorder of the sympathetic nervous system in all uncomplicated cases. Of course, actual inflammatory conditions of the cord and its membranes may co-exist with concussion, and we may have the huge array of both physical and psychical symptoms described by the great English surgeon. But the former set are not to be entertained in the consideration of concussion, and should be assigned to treatises on surgery, where they belong.

Seguin acknowledges that he knows little or nothing of the pathology of this condition. Oppenheim considers it traumatic hysteria; Hammond, spinal anemia, while Ostler, in his recent work on practice, considers it an illustration of nervous asthenia.

I believe that Clevenger is right in his idea that the sympathetic ganglia are involved in spinal concussion. But I do not admit that such impression is produced by an inflammatory encroachment on them from the spinal ligaments, marrow, nerves or meninges. While the sympathetic system is as yet only partially explored, and its functions but imperfectly understood, we all know that powerful impressions can be made upon the human body under its excitation. Suggestion alone, whether auto or otherwise, is sufficient to flush or blanch the face, increase the action of the heart, check or augment the functions of the glands, aye, even raise the temperature of the body.

Now, these phenomena are often observed in a chronic degree in spinal concussion (or rather in its effects) so that it would

require but a little further reasoning to establish concussion to be an impression made upon the sympathetic system of nerves by some painful or powerful agency, the memory of which, along with the suggestions of others not only continuing its existence but actually increasing its severity. From the fact that no definite pathology has ever been discovered in persons dying after concussion, and from the further fact that a majority so speedily recover after an award for damages, it follows that there could have been no other derangement of the system than one of a purely nervous, functional or temporary nature. Hence my conclusions concerning the sympathetic nature of the disease.

But how does the sympathetic system become involved in spinal injuries, and how is it affected?

To such interrogatories I will state that clearly, through the perceptive centers of the brain, and through them alone, does the nerve receive its shock, and the result of this impression is the induction of a state of partial paralysis, or paresis of the entire sympathetic system. That the ingress of such impression is through the sensorium is evident from the fact that persons asleep or even intoxicated at the time of accidents, are rarely ever the victims of uncomplicated spinal concussion. Nor are children, as a rule, so affected; while those who sustain marked physical injury to other portions of the body are nearly always exempt from "railway spine."

The reason of all this is obvious. In the first set of cases, sleep and alcohol interpose a barrier to fright, which is always the great disturbing element in such cases; children are often incapable of realizing the danger of a situation which would turn the hair of their parents gray at its encounter, while he with the fractured limb has all his thoughts so rivited to his painful member as to be oblivious to his overshocked nerves. Thus would it appear that Oppenheim's "Railway Brain" was a truer pathological assignment than Erichsen's "Railway Spine" for such disorder. The sympathetic system, brought into a state of paresis, through the action of fright, is easily maintained

in such condition through the agency of suggestion, especially, too, if there be associated with it, as there usually is, sprain or soreness of the muscles of the back. Thus, the memory of the accident is so frequently stimulated, and the direful consequences of the injury so often alluded to, that, in a short time, a perfect state of hypochondriasis is induced, which, if allowed to become fully established, is frequently very difficult to cure.

Clevenger is correct, indeed, when he asserts the sympathetic nature of spinal concussion, but he is eminently wrong when he associates that nature with an inflammatory cause. The avenue through which this system is invaded is the brain, and thus it is that pecuniary aid for personal damages so often cures our patients. It is simply absurd to state that money cures a meningitis, or position heals an inflamed nerve.

That spinal concussion, psychical as it may be, is an actual disease, is also a fact beyond dispute, although produced by sensorial causes, and unattended by a single demonstrable lesion. I know a lady in this city, demented for the past thirty years at the sudden loss of her husband, and no doubt hundreds of such cases could be collated, were the investigation made upon the subject.

PROGNOSIS.

As regards the prognosis of uncomplicated cases of spinal concussion, it would be safe to assert that, if left alone, with a continuance of their psycological influences weighing down upon them, such as self-centered, morbid thoughts and suggestions, or the depressing forebodings of friends and advisers, then a protracted and unvarying train of asthenic symptoms would be sure to continue, which might last indefinitely. If, on the other hand, such influences as just cited could be diverted or removed altogether, and a proper system of hygiene and exercise be substituted then, most of such patients would be, in a short time, restored to health.

This question of prognosis is one of great importance to the medical practitioner, for it is a well-known fact that most of

such cases drift into court, and upon this question of *duration of injury* does the matter of thousands of dollars depend. Hence the physician should weigh well every circumstance connected with a patient of this sort under his observation, and while he should appreciate every phase of his melo-dramatic case, in court he should always bear in mind that *facts*, real and absolute, are what he is called upon to testify to. Furthermore, he should bear in mind, that a great majority of all such patients recover health after settlement of their cases, in spite of the array of doleful symptoms which predominated pending such settlement.

It is my opinion, and I think that facts bear me out in the same, that traumatic psycoses are much oftener recovered from than those of non-traumatic origin.

Taking, therefore, all such cases as they occur it would be safe to say, that unless some demonstrable lesion of the spine existed (which would, of course, imply some other disease) nine-tenths of the cases of spinal concussion would either entirely recover health, or be vastly improved if subjected to proper treatment instead of being trained for litigation.

Treatment.—The treatment of spinal concussion is divisible into two stages, viz.: That for the primary shock to the system, and latterly should neuroses follow, to these remote consequences.

In carrying out the measures to be pursued two cardinal principles are ever to be borne in mind by the practitioner: First, that absolute physical rest in the early stage; and, secondly, mental diversion and physical exercise in the subsequent stage are essential to the cure of spinal concussion.

A patient who has just received an injury to his spine, be it trivial or severe, should be placed in bed and retained there until every vestige of such injury has passed away. It matters not that your patient insists on going around, asserting that he feels the better for the exercise. Such indulgence, if permitted, would probably eventuate in some form of inflammatory reaction at no distant date, and in itself would prove the most

potent cause, in predisposed subjects, to what most authors denominate the "railway spine." If no evidence of any of the grosser lesions exist, then a systematic course of spinal friction or rubbing should be instituted.

Rarely will dry cupping be necessary at any time, but stimulating liniments will prove to be of the highest value by regulating the spinal circulation, and better still, by dissipating the muscular spasm and soreness which nearly always accompany such accidents. Sleeplessness, which often attends injuries to the spine, will be best relieved by moderate doses of sulfonal, while morphine should be used if pain persists in spite of the foregoing remedies.

During convalescence from this stage, care should be taken that all the secretions are being properly maintained, and especial effort on the part of the physician should be made to encourage his patient in the idea that he is getting well.

In the great majority of cases, where the foregoing plan of treatment has been adopted, our patients will be able to resume their usual avocations actually cured. But stress must be laid upon the matter of physical and mental quietude during the primary stage, for, without these, secondary psychoses will invariably follow.

Cheer your patients as much as possible, and give them to understand that the muscular pains, so common in all forms of injury, are temporary, and not necessarily serious.

Not unfrequently, cantharidal applications will prove most efficacious in removing those tender spots which so much annoy our cases. I often use them repeatedly over the same muscular spaces, and have never known a case which was not materially and promptly relieved of pains by their employment.

This briefly embraces about all necessary to be used in cases of primary concussion of the spine. Where a shock is very severe, of course, stimulants, cautiously administered, both internally and otherwise, should be employed. However, as a rule, treatment in this stage will be found more often precautionary against the remote nervous phenomena, which so often

proceed the original injury, than against any dangerous condition existing at that time.

When called upon to treat a person, who has on some *remote* occasion received an injury to the spine, the physician's first duty should be to ascertain whether any inflammatory disease exists or not.

Differentiation is an all important matter in such cases, for so easily can a counterfeit be imposed upon us for a genuine article that, not unfrequently, a good physician will be deceived in listening to the narative of his patient. To determine this point of inflammatory nature a thorough and systematic examination of the case should be made. The patient should be directed to expose the muscles of both upper and lower extremities, and especially of those along the spine. Find the tender spots, for there will always be several of them, and carefully mark them out for future reference. Provide yourself with a reliable double-acting battery, or one of each variety, and test the muscles dependent on that portion of the spine supposed to be diseased. Note the response these muscles give to such electrical irritation, and mark well the reflexes of the lower tendons. The method of directing such examinations is clearly described in Ranney's work on nervous diseases, which is herein referred to as a most excellent authority upon such subjects. Should the physical or objective symptoms correspond or harmonize with the subjectives then are we in a condition to pronounce in favor of an inflammatory disease, such as myelitis, menengitis and the like.

If, on the other hand, we find muscular reaction and the tendon reflexes in a normal condition, then we are certain that we have to deal with a non-inflammatory subject.

Here the physician's tact and judgment will be largely drawn upon. He has now to decide upon a true psycosis or a feigned disease. Generally, a malingerer appears in better physical condition than the genuine sufferer. There is usually a lack of sincerity in his statements, and especially a lack of genuousness in his communications to his examiner. This reticence

and lack of candor on the part of the malingerer are very significant, and imply that he is fearful of detection if he says too much. Whereas, the true sufferer is often too apt to bore us with an array of symptoms, and a degree of severity and earnestness which carry the stamp of sincerity upon their face. In the afflicted the pulse is usually denotive of a run down system. While in the malingerer the circulation is generally normal.

In instances of doubt the antecedents of every case should be thoroughly investigated, and especially should the reputation of such person's veracity be inquired into. However, a careful watching of them will soon enable us to arrive at a correct conclusion, and assist us in discriminating between the true and the false in the most of such.

In the treatment of this secondary stage but little medicine, if any, will be needed to be given. In lieu thereof, I would suggest the "diversion plan," by which I mean that system which has for its object the diversion of the patient's attention from his actual or supposed disease. Moderate, and if he can stand it, a full amount of physical exercise, such as walking, riding and the like should be enjoyed.

Usually some light work, where the patient's mind and body can be kept in regular and constant exercise, will be found most beneficial, especially, too, if such employment brings him some pecuniary revenue, even though very moderate.

All books and papers, and in fact all suggestions relating to such accidents, should be strenuously avoided by the patient, who should be encouraged in the belief that he will eventually regain his health. Should an internal tonic be deemed advisable, I know of nothing more applicable than some of the malt extracts to be found in drug stores. The small per cent of alcohol contained in them will stimulate digestion and aid in building up the strength.

Brown-Sequard's pil neuralgica has acted like a charm in a few cases upon whom I tried this remedy of late. Not only were these patients relieved of their vague pains, so common in this disease, but the pulse usually rapid, was brought immedi-

ately into healthy action by its employment. I would not hesitate to use the Sequard pill in similar cases in the future. I have no faith in liniments for this stage, but should fixed pains about the limbs or body be complained of, then "flying blisters" are the remedy on which you can confidently rely to do prompt and excellent service. These will hardly be needed, however, if my diversion plan is properly carried out, since this, better than all others, tends to restore that self-confidence which is invariably lost in most cases of spinal concussion.

CONCLUSIONS.

In concluding, I will briefly epitomize the main features which I have sought to establish in this paper:

1. In reality, spinal concussion is a temporary condition, and ordinarily of brief duration, lasting a few hours, or days at most.

2. Authors have erroneously considered, under this heading, many of its consequences, such as the psycoses and secondary inflammations of the cord and its membranes.

3. For the sake of convenience, only, and in order to be in fashion, I have included, under "Concussion," the primary shock, as well as the subsequent neuritic sequences after spinal injuries.

4. Spinal concussion, as thus considered, has no demonstrable pathology attached to it, and all secondary inflammation should be designated as myelitic, or some variety of meningeal inflammation, and should be treated as such.

5. In this disease the injury is thrust upon the sympathetic system of nerves through the perceptive centers of the brain, and not through any inflammatory process of the cord, so that persons asleep or intoxicated at the time of an accident, and those whose attention is riveted upon some grossly injured member of the body, are always the lightest sufferers after such accidents.

6. In its nature spinal concussion is a true hypochondriasis, and is kept alive by morbid suggestions and evil forebodings,

from self and others, as well as perpetuated by a lack of self confidence and a neglect of proper exercise, both physical and mental.

7. Being a disease with few, if any, objective symptoms, it is often the avenue adopted by malingerers to claim pecuniary reward for home manufactured injuries.

8. Absolute rest after injury, and mental diversion, with light bodily exercise, especially remunerative exercise in the secondary stages, are the best means known for averting chronicity, and warding off incurableness in spinal concussion.

9. Where the foregoing methods are properly carried out the prognosis in this disorder, both as to life and future usefullness, will be very good.

DISCUSSION ON DR. WILKINSON'S PAPER.

DR. ALLEN J. SMITH objected to Dr. Wilkinson's article in that he had included in his idea of the railway spine too many of the immediate symptoms of the accident, and he insisted that in some of these cases symptoms which might be ordinarily regarded as subjective, became so marked as to really have objective importance. For example, one could easily believe that tender spots along the course of the spine might be simulated by a hysterical patient or a case of malingering, yet, if upon application of heat or electricity along the spine and without any suggestion to the patient, these tender spots should become actually painful, so that the patient cries out, and the muscles underlying them contract spasmodically, it is not probable that they are without material basis. It is true, that in railway spine little is known as to the existence of lesions, but it must be recalled that very few post mortem examinations have been performed upon this class of cases, and that the locations where such lesions are likely to be found in the central nervous system or in the peripheral nervous system or in the sympathetic system, require considerable skill and knowledge for their proper investigation. The facts cited by Dr. Wilkinson, that some of the patients were cured by receiving money from the railway, proved nothing except that it made the conditions of a speedy recovery more favorable. Every physician knows that peace of mind and absence of worry are favorable conditions for recovery. Money is often the means of prolonging life, if not of saving

it. The rich consumptive will live longer than the poor one. The cases cited by Dr. Wilkinson were just those which would be most readily affected, as they were due to mental and nervous causes.

DR. WILKINSON admitted there were cases in which there was a pathological lesion of the spine, but he excluded those, and that was why he brought his paper under the medical and not the surgical section. Painful spots occur in people who were never injured. Osler, Seguin and others mention cases where painful spots existed without history of injury. He was trying to distinguish spinal concussion from meningo-myelitis, and that was the chief point in his paper.

DR. SMITH asked Dr. Wilkinson if he excluded all cases of inflammation in spinal cord, for, if so, he thought there was no case for consideration.

DR. WILKINSON said he had under consideration only those who manifested hypochondriasis as the result of accident, but showed no lesions whatever.

THE ACTION AND USES OF PENTAL.

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Demonstrator of Physiology in the Medical Department of the University of Texas, etc.

Pental is a product obtained from amylenehydrate, when this latter substance is heated with acids. The new anæsthetic is also termed *Trimethylethylene* and *Beta-iso-anylene*, the chemical composition of which is represented by this formula: $(Ch._3)_2$ C. Ch., Ch_3 or $C_5\ H_{10}$.

Pental is a colorless, highly inflammable liquid, burning with an illuminating flame. It has a specific gravity of 0.678, and a boiling point of 100.4°F. (38°C.) Although exceedingly volatile, it does not decompose on exposure to light or the external atmosphere. Pental is soluble in alcohol, ether and chloroform, but is insoluble in water.

The interest which the new drug has awakened, as a general anæsthetic in surgical practice, necessitates that its physiological action be studied carefully. More or less extended researches in the clinical ward have been made, especially in Europe, regarding the effects of pental in the animal economy, but no elaborate studies as to how such effects are brought about have been pursued.

The alleged chief action of the drug as an anæsthetic, leads to the importance of a knowledge of the behavior of the new agent, particularly on the circulation and the respiration. To these two systems I have confined, for the present, my experimental studies.

In a paper entitled, *Chloride of Ethyl and Pental*, published by Prof. H. C. Wood and the writer,[1] a note is appended in

1. *Dental Cosmos*, July, 1892; also, *Transactions of the Philadelphia County Medical Society*, 1892.

regard to the actions of pental; but this latter study, only preliminary and superficial, cannot be considered, by any means, as conclusive. From the details, however, of one of the experiments performed, it was observed that the production of anæsthesia, with pental, in the dog, was each time accompanied with a marked fall of the arterial pressure. The rate of the respiration was increased, although the extent of the respiratory movements, most of the time, was not distinctly above the normal. The accompanying tracing in the paper referred to shows the depressing effect of pental upon the heart, this organ being affected much more severely than the respiratory centres, since the respiratory movements continued after the cardiac viscus had ceased to beat.

Wood and the writer concluded, then, from such evidence, that pental would probably prove to be a dangerous anæsthetic, and that, if extensively used, would produce death by cardiac paralysis; and further, that, even in non-fatal cases, the after effect, in the human being, would be disagreeable, from the fact that in the dog a peculiar, wild excitement was noticed directly after the anæsthesia from the drug had gone off.

In continuing my own studies with pental, I have instituted a special series of experiments, begun at the laboratories of the University of Pennsylvania and finished at the Physiological laboratory of the University of Texas, at Galveston. My experimentation may not be an elaborate one, but it is sufficient, I believe, to show the range of action of the drug in question upon the circulation and respiration.

I divided my experiments into three series, as follows: 1—those performed upon normal animals; 2—those made in animals whose vagi had been previously cùt; and, 3—those performed in animals in which the spinal cord and vagi had, likewise, been previously severed. The animals used were, exclusively, dogs.

The dog was first etherized in order to perform the various operations for the preparation of the animal. After the connection with the recording kymograph was made, of the respira-

tory apparatus by means of a tracheal tube and the corresponding Marey's tambour, and of the circulatory apparatus by the usual methods, the animal was allowed to recover completely from the effects of the ether in order to avoid, as far as possible, vitiated results.

The pental was administered by inhalation or intravenously. As objection might be taken to this latter method of ingestion, I may here repeat what Wood and the writer[1] have already remarked, that is, that "it is plain that whether a drug be injected directly into the jugular vein, or whether it enter the system by absorption into the pulmonary capillaries, it must first reach the heart before being diffused throughout the general circulation. In the one case, the drug passes first into the right side of the heart, whilst in the other case, it goes into the left side of the heart."

The following experiments in tabular form, and also by means of plots, are appended:

1. *Loc. Citat.*

EXPERIMENT NO. 1. DOG. WEIGHT, 11.5 KILOS.

Normal—Pental by Inhalation.

Time, M.S.	Dose Grammes	Pressure m. m.	Pulse per min.	Respiration per min.	REMARKS
.....	.....	160	134	24	
8.00	.....	162	132	24	Inhalation begun of one bottle (10 grammes) poured into an ordinary inhaler.
8.30	.....	140	102	38	
8.40	.....	138	102	46	
9.00	.....	130	92	50	Palpebral reflexes weak; inhalation ended.
9.20	.....	150	96	58	
9.40	.....	158	98	52	Reflexes normal again; animal much excited; salivates and urinates.
11.30	.....	164	136	60	Inhalation of second bottle begun.
11.50	.....	128	98	.....	Respiration irregular and shallow.
12.00	.....	98	68	102	Anæsthesia apparently complete, but conjunctiva reflexes not entirely lost.
12.50	.....	98	152	102	Pulse small; respiration exceedingly shallow; removed inhaler.
13.10	.....	142	146	96	
13.40	.....	150	134	82	
14.20	.....	158	132	52	Reflexes normal again; dog very restless, and whines.
17.30	.....	162	136	40	Dog continues very restless.
18.40	.....	162	134	40	Inhalation of third bottle begun.
19.50	.....	60	76	78	Inhalation ended; respiration shallow, with a tendency to the Cheyne-Stokes type; reflexes weak, but animal apparently narcotized.
20.20	.....	132	142	62	
20.50	.....	166	168	52	
21.30	.....	162	162	42	Animal has regained consciousness, whines, and is very much excited.
24.00	.....	160	168	48	Dog continues excited; pants as if much fatigued. Was afterwards killed.

EXPERIMENT No. 2. DOG. WEIGHT, 12 KILOS.

Normal—Pental Intravenously.

Time, M.S.	Dose Grammes	Pressure m. m.	Pulse per min.	Respiration per min.	REMARKS
.....	.....	170	148	18	
10.00	0.2	176	152	18	Injection begun.
10.20	.....	158	136	24	Injection ended.
10.40	.....	146	120	36	Pulse irregular; palpebral reflexes weak; pupils dilated.
11.00	.....	148	120	38	
12.50	.....	152	142	32	
13.30	.....	168	148	36	Apparently conscious again, but restless.
14.00	0.3	168	148	36	Injection begun.
14.20	.....	130	116	42	Injection ended.
14.40	.....	120	98	56	
15.00	.....	102	128	66	Narcotized, but eye reflexes not entirely gone; pupils widely dilated; respiration shallow.
15.30	0.5	110	136	68	Injection begun.
16.00	.....	92	166	70	Injection ended.
16.30	.....	80	178	76	Continues narcotized; pulse small.
18.30	1.00	96	180	68	Injection begun.
19.00	.....	62	172	68	Injection ended.
19.20	.....	40	186	52	Anæsthesia complete, but eye reflexes can still be elicited mechanically.
25.00	.....	158	196	60	Consciousness has returned; animal very much excited, whining; pupils continue dilated.
28.00	2.00	162	186	62	Injection begun.
28.30	.....	56	164	64	Injection ended.
29.00	.....	32	146	60	
29.30	.....	28	126	48	
30.00	.....	16	96	36	Pulse very weak; spasm.
30.30	.....	.....	.....	6	Heart ceased.
31.00	.....	.....	.....	4	
31.30	.....	.....	.....	2	Two minutes afterwards the needle registered two or three respiratory movements.

EXPERIMENT No. 3. DOG. WEIGHT, 18.5 KILOS.

Normal—Pental Injected Intravenously. One Vagus Prepared.

Time, M.S.	Dose Grammes	Pressure m. m.	Pulse per min.	Respiration per min.	REMARKS
.....	.....	172	182	21	
10.00	.....	170	182	21	Tested irritability of vagus with a medium current of electricity. Applied to central end, heart ceased in 15 seconds; to peripheral end, heart arrested in 8 seconds.
15.00	0.5	176	178	24	Injection begun.
15.20	.....	160	156	36	
15.40	.....	142	138	48	Injection ended.
16.00	.....	108	128	58	
16.20	.....	98	112	68	The same electrical current applied to either end of vagus is followed by an almost instantaneous arrest of the heart.
22.00	.....	168	162	38	
22.20	0.5	168	162	38	Injection begun.
22.40	.....	146	148	68	
23.00	.....	126	126	78	Injection ended.
23.30	.....	92	108	82	Dog narcotized; pupils widely dilated.
24.00	.....	82	102	78	Same effect as before, on application of electrical current to cut ends of vagus.
24.30	0.5	106	112	64	Injection begun.
25.00	.....	92	126	60	Injection ended.
26.00	.....	42	204	62	
27.00	.....	40	214	62	
27.30	.....	36	224	68	Complete anæsthesia; same electrical current applied to vagus had now no effect on cardiac action. Animal died eventually.

EXPERIMENT No. 4. DOG. WEIGHT, 12.8 KILOS.

Normal—Pental Intravenously—Ischiatic Nerve Prepared.

Time, M.S.	Dose Grammes	Pressure m. m.	Pulse per min.	Respiration per min.	REMARKS
.....	.....	142	168	26	
15.00	.....	144	166	24	
16.00	0.5	144	166	24	Injection begun.
16.30	.....	126	148	38	Injection ended.
17.00	.....	118	120	42	Pulse waves large.
17.40	.....	116	126	48	
19.30	0.5	120	136	48	Injection begun.
20.00	.....	102	116	52	Injection ended.
20.30	.....	98	112	52	
21.00	.....	98	110	58	Pulse waves large; animal narcotized; faradization of ischiatic nerve for 15 seconds.
21.30	.....	120	124	42	
21.45	.....	128	130	48	
22.30	0.5	130	142	48	Injection begun.
23.00	.....	112	120	56	Injection ended.
23.40	.....	80	116	56	
25.00	1.00	116	120	52	Injection begun.
25.40	.....	98	102	52	Injection ended; pulse waves large; spasm of tetanic nature.
26.00	.....	102	148	50	
26.40	.....	100	182	48	
27.40	.....	108	196	48	
28.00	.....	102	198	42	
29.00	.....	.....	.....	.....	Heart ceased suddenly; animal continued to gasp for some time afterwards.

EXPERIMENT NO. 5. DOG. WEIGHT, 10.5 KILOS.

Vagi Cut—Tube in Trachea—Pental Intravenously.

Time, M.S.	Dose Grammes	Pressure m. m.	Pulse per min.	Respiration per min.	REMARKS
.....	.....	180	210	8	
10.00	.....	180	212	8	
10.30	0.5	180	212	6	Injection begun.
11.00	.....	168	182	8	Injection ended.
12.00	.....	162	176	16	
13.30	0.5	164	174	22	Injection begun.
14.00	.....	156	166	38	Injection ended.
15.00	.....	160	150	42	Animal narcotized.
16.30	.....	162	158	48	
17.00	0.5	162	158	46	Injection begun.
17.30	.....	142	140	56	Injection ended.
18.00	1.00	128	132	50	Injection begun.
18.30	.....	106	120	32	Injection ended.
19.30	.....	82	80	10	
21.00	.....	40	32	10	
22.30	.....	22	18	8	
23.00	.....	.....	.....	4	Heart stopped.
24.00	.....	.....	.....	2	
26.00	.....	.....	.....	.....	Animal dead.

EXPERIMENT No. 6. DOG. WEIGHT, 10.3 KILOS.

Vagi and Cord Severed—Cord Cut in Cervical Region—Pental Intravenously.*

Time, M.S.	Dose Grammes	Pressure mm.	Pulse per min.	Respiration per min.	REMARKS
.....	.....	68	124	.....	
1.30	0.5	68	122	.....	Injection begun.
2.00	.....	52	102	.....	Injection ended.
2.30	.....	42	98	.....	
3.00	.....	44	98	.....	
4.30	0.5	46	98	.....	Injection begun.
5.00	.....	32	80	.....	Injection ended.
5.40	.....	28	46	.....	
6.00	.....	22	30	.....	
7.00	.....	18	22	.....	Killed eventually.

* Post mortem examination showed that the cord had been completely severed.

The most superficial analysis of the preceding experiments will reveal the fact the pental is capable of producing anæsthetic effects, but that these effects are generally accompanied with disturbances of respiration and particularly of the circulatory system.

Thus, in experiment 1, the first inhalation of 10 grammes of the drug was followed by a decline of both the blood pressure and the pulse rate, even before the production of anæsthesia. The pressure from its normal height, 162 m. m., fell to 140 m. m. in the course of half a minute after the beginning of the inhalation, and to 130 m. m. in half a minute longer, when the eye reflexes became weak and the animal was apparently narcotized. The pulse was also reduced in rate, while the respirations were increased in number, though no change was observed in the depth of the movements. Forty seconds after the removal of the inhaler the conjunctival reflexes became normal, and the animal exhibited a condition of great excitement, accompanied with marked salivation and, apparently, involuntary urination.

The second inhalation was followed by similar phenomena, as regards blood pressure, pulse and respiration. At a time, however, when the anæsthesia was complete, although the pressure remained at the height of 98 m. m., there was a sudden rise in the number of pulsations, even above the normal, although the character of the pulse indicated weakness. In the course of nearly two minutes after the occurrence of this phenomenon, both pulse and pressure returned to their normal standard, *pari passu* with the disappearance of the anæsthesia; yet the respiration continued above the normal, and the animal gave evidence of marked excitement.

After an interval of about five minutes, the third inhalation was administered. The same results were produced; reduced arterial pressure and pulse-rate, and an increase of respiratory movement. And now, the breathing, essentially shallow, showed a tendency to the Cheyne-Stokes type, at the very time, indeed, when the dog appeared to be completely under the influence of the anæsthetic. About three minutes afterward, however, the animal had regained consciousness, and the signs of excitement were again manifest. The pressure went back to normal, and the pulse even beyond its original rate.

In the second experiment the drug was given intravenously. The results obtained, similar in almost every respect, to those of the preceding one, are sufficiently clear and may be observed in the tabular form given. There was produced the same depressant action upon the heart and the rate of the cardiac beat, and the same stimulating action on the respiration. As will be noticed, the fall in the number of pulsations was later followed by a decided increase of the same above the normal. The last injection of two grammes proved fatal to the animal, death taking place through cardiac paralysis.

The explanations of the results obtained in experiment 3, (these being practically similar to those of the other experiments,) will be given later, that is, when I shall enter into the discussion of how the circulatory phenomena are brought about. I may here state that many other normal experiments gave almost invariably the same results.

It is seen, then, from the foregoing experiments, that pental is capable of producing anæsthesia, but that this is, although rapidly established, most too fugacious for practical purposes, and that it is usually accompanied by a depressing effect upon the circulation; that the action on the respiration, though apparently stimulating, is unimportant, and that sometimes the respiration is dangerously interfered with also; lastly, that the after-effects are those of excitement, which in all probability are of a disagreeable nature.

These general results appear to sustain those previously obtained by Wood and myself. Again, my own experience with the drug agrees more or less with that of Calab[1] and Weber.[2] Calab, as a result of considerable clinical experience and of a series of experiments upon dogs, has concluded that anæsthesia as produced by pental is superficial; that the time necessary to obtain sufficient anæsthesia for ordinary surgical operations is much longer than with chloroform; that pental has a depressant effect on the circulation, and that when given in sufficient quantity to produce complete anæsthesia, may cause grave results; and that, finally, the local anæsthesia produced by pental is inferior to that caused by ether. Weber noticed excitement in some human beings and in few other instances slight tetanic spasms in the arms and legs. In the case of an alcoholic the excitement was very marked.

I will now examine how the various phenomena above described are brought about.

Anæsthesia—When pental is administered by inhalation the anæsthesia occurs, as is shown in experiment 1, in from 1 minute to 1 minute and 20 seconds, and lasts for a period varying from 20 seconds to 1½ minutes after the removal of the inhaler, although this must depend largely upon the quantity of the drug ingested. No doubt a longer period of anæsthesia than the one I have referred to could be induced by a persistent administration of the drug.

1. *Clinica*, Bucharest, January, 1892.
2. *Deutsche Medicin Wochenschr.*, Leipsig, February 16, 1892, and *Munchener Medicin Wochenschr.*, No. 2, 1892.

The same may be said in regard to the ingestion of the agent intravenously. I found that I could keep the animal narcotized as long as the repeated introduction of small quantities of pental was maintained. When the drug is given through a vein there is a tendency for the anæsthetic effects to occur sooner and last longer than when the drug is administered by inhalation, probably from the fact that a larger amount of the medicament is acting at once in the former instance, and that in the latter the drug is rapidly eliminated by the lungs, owing to the volatile nature of the medicament. Yet, even when ingested directly into the circulation, pental produces quick anæsthetic effects, it is true, but these disappear also in a comparatively rapid manner.

The anæsthesia caused by pental is chiefly of central origin, as shown by the fact that even when the loss of consciousness was complete, the conjunctival or palpebral reflexes were not entirely destroyed, since they could be elicited by mechanical stimuli. Undoubtedly, the local anæsthetic action of pental, if it has any, is very weak.

ON THE CIRCULATION.

On Blood-Pressure—The blood-pressure in the normal animal is usually depressed by pental, as an examination of the preceding experiments reveals.

A careful study of these experiments will show, also, that for a certain period of time the rate of the pulse varied *pari passu* with the changes of the pressure; the former being slowed or increased in rapidity according as there occurred a diminution or an increase in the height of the pressure. So that, two curves, for instance, one representing the rate of the cardiac beat, and the other the changes of the arterial pressure, taken from a tracing of an animal under the influence of pental, would undoubtedly show a more or less parallel course. This in itself is a very significant fact, and appears to point to an action of the drug exercised on the heart itself, or upon the nervous mechanism of the organ. An opposite course of the curves would indicate a vaso-motor spasm.

An irritation of a sensitive nerve by a sufficiently strong current of electricity, as is seen in experiment 4, caused an almost immediate rise of the column of mercury in the manometer, this showing evidently that the vaso-motor system was intact. But this is not all. The same phenomenon of blood-pressure reduction occurs after previous section of the pneumogastrics, and similarly after division of both vagi and the spinal cord. It would, therefore, be inferrred that pental causes a lowering of the arterial pressure mainly by an action upon the heart.

The fall of pressure is not, however, so marked after previous section of the vagi, and it would seem as if peripheral pneumogastric stimulation was another factor in causing the decided diminution observed in normal animals. As will be noticed in experiment 2, the pulse, after a poisonous dose of pental, became suddenly rapid, due, no doubt, to a peripheral paralysis of the vagi (a phenomenon clearly shown toward the latter part of experiment 2); but there was noticed, at the same time, a corresponding rise of the arterial pressure, the pressure being subsequently depressed by another dose of the drug.

There is no doubt, then, that two factors must be taken into consideration to explain the fall of the arterial pressure: a direct cardiac action and a stimulation of the cardio-inhibitory centers peripherally.

The Pulse—In experiment 1, the first inhalation of 10 grammes brought down the pulse rate, in a few seconds, from 132 to 102, and by the end of the inhalation, when the palpebral reflexes showed evidences of weakness, to 92. About two minutes afterwards the cardiac pulsations returned to the normal standard, to be again reduced by a second administration of the drug. When anæsthesia became complete apparently, the pulse rate marked 68, and in a few seconds it jumped to 152, that is, about twenty (20) beats above the normal rapidity. The effects of the drug were allowed to pass off. A third inhalation was followed by the same phenomenon: a reduction at first, and a marked increase shortly afterwards, that is, as high as 168, this continuing even after the anæsthesia had disappeared.

The same results were observed when pental was administered intravenously, as is shown in experiments 1 and 2.

Pental, then, causes a slowing of the pulse, followed by a return to the normal, or by an increase above this point if the dose has been sufficiently large.

In studying the causes of these changes, it is ascertained that the drug produces the same effecst on pulse-rate, after previous section of the vagi, and similarly after all nervous connection with the heart has been destroyed by previous division of the pneumogastrics and of the spinal cord. Is the action of pental, then, confined to the heart itself in causing the phenomenon of pulse-rate reduction?

It has been demonstrated that the drug exercises a stimulating action on the cardio-inhibitory centres, peripherally, this being one of the factors to be taken into consideration in explaining the fall of the blood pressure. Now, then, an examination of experiment 3 shows that faradization of a vagus in an animal under the full influence of pental produces arrest of the heart more rapidly than in normal conditions. These results are sufficiently clear. Again, when the pulse has become markedly increased above the normal point, as is also observed in the same experiment 3, electrical stimulation fails to arrest cardiac movements, a result similarly self-explanatory.

There is, therefore, under the action of pental, a primary stimulation followed, especially when the drug has been ingested in large doses, by a paralysis of the cardio-inhibitory centres, peripherally, this alone explaining the changes in the pulse rate observed.

When the vagi have been previously divided, the drug causes a reduction of pulse rate, though in some instances the cardiac beats, under such circumstances may return to the starting point. I have never seen them go beyond this. If the dose of pental is sufficiently poisonous, the fall of the pulse rate, in such cases, is generally progressive, with very slight changes, till the occurrence of death. Just before a fatal issue, the pulse is apt to become small and rapid, but these are evidences of weakness of the cardiac viscus.

It is evident, then, that the primary reduction of the pulse rate caused by pental is due to a direct cardiac action and to a stimulating influence exercised on the peripheral cardio-inhibitory centers; the secondary increase above the normal mainly to paralysis of the latter, and the final fall to an action upon the heart itself.

I made a few experiments on the heart of frogs, but the results, though apparently similar to those obtained in dogs, were not very satisfactory.

The mammalian heart is decidedly affected by pental, and I found that in many instances the organ, after death, failed to respond to mechanical or electrical stimuli. Usually, death was caused by cardiac paralysis, although sometimes the respiration and the heart stopped simultaneously.

The Blood—At no time was there noticed any marked changes produced upon the blood itself as the result of an action of pental.

ON THE RESPIRATION.

Pental, whether administered by inhalation or intravenously, usually causes a marked increase in the rate of the respiratory movement, as well as in their depth, although the latter phenomenon was not always well marked in my experiments. The increased respiratory rate occurs similarly after previous section of the vagi, showing that the action of the drug is directly on the respiratory centres in the medulla oblongata. But pental, so far as my observations go, cannot be considered as a respiratory stimulant in the true sense of the term.

Large quantities of the drug produce, ultimately, a depression of the respiration, and sometimes pental causes death through failure of this function. The disturbances of respiration before a fatal issue are sometimes manifested in the production of the Cheyne-Stokes type of movements, this phenomenon, when it does occur, being almost surely the precursor of death.

I may state, in passing, that among other noticeable effects produced by pental, there was observed a marked dilatation of the pupil, and sometimes a tendency to tetanic spasms.

CLINICAL USES OF PENTAL.

The clinical uses of pental are few and far between; in fact, the drug has been employed, so far, as a general anæsthetic only, as a substitute for the other well-known agents possessing such powers. The literature of the subject is meagre, and yet the evidence brought forward by several clinicians is somewhat contradictory..

Let me again refer to the experience of Weber[1]. This investigator used the drug as an anæsthetic in the Halle clinique in over two (200) hundred cases. In a few of the chlorotic or hysterical patients there was a moderate stage of excitation. The excitement was great, however, in the case of a chronic alcoholic drinker. In a few instances there were noticed slight tetanic spasms in arms and legs. No untoward after-effects, such as headache, vomiting, or even malaise, were noted, nor were there observed any changes on the pulse or respiration. The corneal reflexes disappeared late, and, in some cases, the pupils were widely dilated. There was no salivation, and laughing occasionally occurred. In some cases the anæsthesia continued for a short period of time after the patient had regained consciousness, and enough to allow the author to remove another stump of a tooth without causing pain. Usually 5 to 10 grammes were sufficient to produce anæsthesia in from 2 to 3 minutes. The pental was used in minor operations, such as the extracting of teeth, opening of buboes, abscesses, whitlows, etc. In the case of fixed joints, however, the narcosis was not deep enough to relax the muscles involved.

According to Breuer and Lindner[2] the chief action of the drug is that of an anæsthetic, and it may be administered in the ordinary way from a mask, or even from a pocket handkerchief. The after effects are said to be slight in most instances, though in some cases dizziness and trembling of the extremities may occur. In two of the cases observed by the authors the patients cried after the operation, but could not give any reason for so

1 *Loc. Citat.*
2. *Wiener Klin. Wocheschrift*, June 22, 1892.

doing. Narcosis was generally established in from one to one and a half minutes, and in children sooner than in adults. In the cases reported by the authors the shortest time for the production of anæsthesia was 40 seconds and the longest 31 minutes. Alarming symptoms were noticed in one case. In two erythema was produced. The pulse was not affected in an unfavorable manner. For slight narcosis 75 to 150 grains (4.38 to 8.75 grammes) of the anæsthetic were used; for the deepest narcosis, about 1 ounce (27.9 grammes.)

Although no unpleasant effects were produced, the writers believe that, as with chloroform, great caution should be taken in administering it. They conclude, from their clinical observations that pental, while it will not bring about such deep narcosis as does chloroform, will produce it sufficiently to permit of major as well as minor operations being performed; and further, that the narcosis occurs rapidly, disappears quickly and is not followed by ill after-effects. And yet Kramer[1] affirms that out of the 101 cases of pental anæsthesia occurring in the experience of Breuer, in one artificial means had to be resorted to in order to bring the patient back to consciousness.

Hollander[2] believes that for short operations, especially for the extraction of teeth. pental is much superior to bromoform, ether or chloroform, and that it is exceedingly safe. The author emphasizes the entire lack of all disagreeable feelings on awakening from pental anæsthesia.

According to Paschkis,[3] pental can be administered in the same way as ether. The first effect is that of excitation, then contraction of the various muscles, and even opisthotomos may be produced in some cases. The corneal reflexes disappear late, but a stage of analgesia occurs early, which can be made use of for minor operations. Narcosis comes on in from 1 to 1½ minutes, and lasts so long as the administration of the drug is continued. The recovery of the patient is pleasant and

1. *Centralblatt f. Chirurg.*, No. 27, 1892.
2. *Therapeutische Monatshefte*, January, 1892.
3. *Centralblatt f. d. g. Therap.*, February, 1892.

prompt; and yet the author further remarks that a staring countenance, difficulty of speech, and a stumbling gait lasting for a few minutes, are observed. Sometimes a slight redness of the face is seen during the narcosis. The writer refers to two cases of death produced by pental.

C. G. Velez[1] employed this anæsthetic in 108 cases of minor operations, especially of a dental nature, with apparent good success. In cases where it was necessary to keep the patient under the influence of pental for a considerable time, consciousness was allowed to return, and then the drug was again administered. Following this operation, half a minute was alone required to induce a complete narcosis. It is stated that, in one case, pental was thus given three times in 30 minutes, and two hours afterwards the patient, a man 28 years of age, was able to walk home by himself. The only disagreeable after-effect noted was a feeling of intense drowsiness during the remainder of the day. The author affirms that 15 centigrammes given on a mask filled with coarse wool will produce narcosis in 1 minute; and that instead of losing its effect, the drug seems to act better on the same individual at each successive application. In some cases insensibility is absolute, but generally, however, consciousness is not entirely lost. The pulse is at first accelerated, but soon recovers its normal conditions. Velez adds that patients will take pental repeatedly without the slightest repugnance. Being inflammable, the drug should not be used at night.

This experimental and clinical evidence, incomplete as it may be, shows that pental is not entirely free from danger, and that the careless use of the drug may bring about fatal results. Further investigations are wanting in order to place pental on the list of good and comparatively safe anæsthetics or to discard it entirely as a worthless and dangerous drug. I shall not, for the present at least, recommend pental as a safe or an efficient general anæsthetic, and until further and sufficient

1 *Revista de Medicina y Cirujia Practicas*, February 7, 1893; *British Medical Journal*, March 18, 1893.

clinical evidence of its usefulness is brought forward, I shall continue to regard it more as a chemical curiosity than as a valuable therapeutic agent.

I will now give a summary of the conclusions I have been able to draw from the preceding study:

1. Pental possesses general anæsthetic properties.

2. The local anæsthetic effects produced by the drug are feeble.

3. Pental anæsthesia is rapidly established, and it also quickly disappears. It is chiefly of centric origin.

4. Pental depresses the circulation to a dangerous degree, causing a fall of the arterial pressure and of the rate of the pulse, the latter phenomenon being followed by an increase above the normal standard.

5. The lowering of the blood-pressure is due to an action upon the heart and to a stimulation of the peripheral cardio-inhibitory centres. The vaso-motor system is apparently not affected by the drug.

6. Under pental, the pulse-rate is decreased at first, due, similarly, to a direct cardiac influence and to excitation of the cardio-inhibitory centres peripherally; the secondary increase to paralysis of the latter, and the final diminution to an action upon the heart.

7. The respiratory rate is increased through a direct action upon the respiratory centers. The respiration is afterward depressed by an influence exercised upon the same. The drug sometimes causes the Cheyne-Stokes type of respiratory movements.

8. Pental produces death, mainly, by cardiac paralysis. Sometimes, however, the heart and the respiration stop simultaneously; at others, a fatal issue is due to respiratory failure.

9. The drug, in poisonous amounts, diminishes, to a certain extent, the irritability of the cardiac muscle.

10. Pental dilates the pupil, this phenomenon being probably of a centric origin.

11. The narcosis of pental is not unattended by unpleasant after-effects, the nature of these being principally that of excitement.

12. Pental cannot be considered as a safe, or even as an efficient general anæsthetic, and is certainly inferior to ether and chloroform.

THE CONTINUED FEVERS OF TEXAS CLASSIFIED. ALL GROUPED UNDER TWO HEADS, VIZ: TYPHOID FEVER AND THE MALARIAL CONTINUED FEVER.

B. F. BRITTAIN, M. D.,

BAIRD.

Continued fevers, and their differential diagnosis, have engaged the attention of all classes of physicians in our state for a number of years; but the question has never yet been satisfactorily settled. A great many intelligent physicians are continually speaking about a continued catarrhal fever, typho-malarial, continued malarial, typhoid fever, slow fever, thermic fever, febricula, etc.

(In writing a paper for this association, it ought to be the aim of the writer to simplify, and not confuse, his subject by making too many hair-splitting distinctions, as is often done in classifying the fevers that prevail with us, almost continuously, at all seasons.) So many different classifications are made of our fevers that men of great experience are often confused to know what a writer means when he speaks of six, or, perhaps, more classes, of our continued fevers, instead of referring to a more natural classification, and grouping them under two heads, viz: typhoid fever, typical or atypical, and one of the numerous varieties of malarial fevers.

The majority of the thousands of cases of so-called slow fevers, when continued malarial fever is eliminated, is nothing more and nothing less than typhoid fever.

When called to these cases, if we would comprehend the great practical fact in making out our diagnosis, that, as a rule, all our continued fevers, such as we have to deal with every

year, more or less, belong to one of the two groups, viz: typhoid fever or malarial fever, our task of classifying would be very much simplified. If all the cases of the two fevers were typical, there would be little trouble in placing them where they belong. But it must be admitted that the symptoms of the typhoid malady, and those of the continued malarial fever are often so similar, that I confess that at times I have been greatly puzzled in making a diagnosis. The classes of cases referred to are often observed where malaria is rife, as, for instance, in Cherokee county, where I practiced a number of years; and a physician is very liable to pronounce a given case typhoid, when subsequent events prove it to be malarial, and *vice versa*. I am not the only one who has been confronted and confused with this difficulty. The errors have been made by every doctor who has practiced much where these two fevers prevail in the same community. Osler, in his work on the Practice of Medicine, confesses to have made the mistake more than once, by sending patients to the hospital believed to be suffering from typhoid fever, when the disease was afterward found to be malarial remittent.

On the other hand, mild or abortive attacks of typhoid fever are often mistaken for thermic fever, febricula, etc. In every community, typhoid fever may prevail in a typical form; and yet, cases are met with in which the symptoms are mild, or, again, lack many of the phenomena peculiar to the disease; but because of this lack, it is no fair argument to say they are not real typhoid cases. If we can satisfy ourselves by an examination of the blood, or otherwise, that such cases are not malarial, it follows as a logical sequence that any given case is typhoid.

I think every one who has seen much of typhoid fever will bear me out in the statement, that in the same community, and sometimes in different members of the same family, grave cases, (exhibiting hemorrhage from the bowels, as a prominent symptom,) and mild cases, (fever not exceeding 102°, no headache, no delirium, no diarrhœa, nor tympanitis) exist side by side, and, do what we will, these mild attacks continue often as long

as the more serious cases. This being an admitted fact, who would have the temerity to place these mild cases anywhere, except under the category of typhoid fever, where they undoubtedly belong?

There are again cases prevailing at the same time exhibiting other phenomena that are to be classed with the typhoid group. In such instances the patient gets a smaller dose of the poison, or he is better able to stand it. He has 1^0 or 2^0 of fever above the normal; there is indisposition to bodily or mental activity. The patient keeps about all the time, attending to his business in a sluggish way; the fever often continuing two to four weeks, but sometimes abating in a week or ten days. These exceedingly mild cases are properly enough called cases of walking typhoid.

To make a positive diagnosis in many cases that I have seen, and in some cases observed by Professor Osler, would be almost impossible without a microscopic examination of the blood. Of course, taking the view that I do of the proper classification of our continued fevers, everything else but typhoid and malarial diseases can be set aside in arriving at conclusions regarding the proper diagnosis. Everyone who has had much to do with the two febrile disorders where they are prevalent in the same section, is struck with the similarity in the symptoms between typhoid fever and malarial remittent.

Enteric fever is often ushered in by ordinary chills and fever, and who is it that has ever treated many of these cases who has not at times given a prognosis of speedy recovery? Yet, the patient continued sick for several weeks, with undoubted typhoid fever, hemorrhage of the bowels and other characteristic symptoms having in the meantime manifested themselves.

It has been stated by Wynter Blyth[1] that ulceration of Peyer's patches might be caused by various microbes, that it was a common condition or accident, and not pathognomonic of enteric fever. But the weight of authority is, that occurring in a continued fever, with or without hemorrhage, the ulceration of the patches is pathognomonic of typhoid fever.

1. Sajous Annual of the Universal Medical Sciences. 1892.

Only an expert bacteriological examination of the blood can lead us to make a proper diagnosis in our two forms of febrile disease.

If an examination of the blood, in any of our patients suffering from continued fever, fails to reveal the plasmodium malariæ, we can set it down as a fact that the case is one enteric or typhoid fever.

I have stated that typhoid fever is the prevailing fever in our state, outside of the malarial affections. Of course the typhoid includes the thousands of cases, often very mild, that do not belong to the malarial group.

Let us see if authorities bear me out. However, before making quotations to sustain my position, that all our continued fevers, as a rule, belong in the typhoid group, except the continued malarial group, I will refer, in the first place, to Prof. Bowling's method of diagnosing typhoid fever as it prevailed in Tennessee and Kentucky a quarter of a century ago. In addition to mild purgatives, he gave sul. quinine quite freely for three days, and, this failing to arrest the fever, he pronounced the case one of typhoid fever. He taught that the fevers did not run into one another; that if the case started out malarial it ended as malarial, and if it started out typhoid fever it ended as typhoid. That was a true statement then, and will hold good for all time to come.

Dr. C. H. Wilkinson, of Galveston, wrote to Dr. Flint, a few years ago, detailing the symptoms of our so-called slow fevers and requested him to make a diagnosis. I have not the article before me, but the substance of the answer was that it was typhoid fever, and such a high authority as Flint cannot be disregarded.

Dr. H. A. West, of Galveston, I think, entertains views similar to my own in regard to the grouping of our continued fevers. He does not fail to recognize the fact that a great many cases, called by other names, are, in reality, enteric fever, notwithstanding their lacking many of the distinctive symptoms.

In his paper of four years ago he quoted from writers such

as Fagge, Hutchison, Loomis, and Strumpell, to show that typhoid fever may exist without exhibiting characteristic phenomena. He said: "It is useless to further multiply quotations. I could proceed and illustrate the fact from every recent authority of note that there are many departures from the typical course of typhoid fever, and that if we expect to find in every case what is called the typhoid condition, many will be overlooked and called by different names, viz: gastric fever, catarrhal fever, simple continued, mucus and nervous fevers."

Wilson and Eshner, (Sajou's Annual of Universal Medical Sciences, issue of 1892,) say that:

"The fevers of the Southern United States is still a matter of discussion. Barber and Howet conclude that it is really enteric, while Shepard considers it a hybrid affection, one element predominating in certain localities, another element in other localities. Mason states that, in Arkansas, there occurs a continued fever, known as slow fever, which is most prevalent in autumn and winter, and which sets in with a chill, followed by fever, headache, nausea and tympanites."

Quinine, Mason states, does no good, but often harm, in such cases. If our brother doctor from Arkansas would come down to Texas we could show him very many cases similar to the ones he describes, and he would find out that many of us call the affection typhoid fever. From the same Annual we learn that the typhoid germ may occupy the spleen and mesenteric glands without doing any injury to the patches of Peyer, and anyone, therefore, making an autopsy, and finding those patches healthy and not infested with the typhoid germ, is not justified in giving the affection another name till an examination has been made elsewhere for the germ.

Professor Osler, in his work on the practice of medicine, just issued, says: "It is very important for the practioner to recognize the mild type of typhoid fever, often spoken of as gastric fever, or even regarded as simple febricula." And further on he says: "The diarrhœa is variable; sometimes it is not present. In such cases the symptoms may continue 16 to 20 days.

In the abortive form, the symptoms of onset may be marked with shivering and fever of 103° or higher. The date of onset is definite, on which Jurgenson lays great stress. Rose spots may occur from the second to the fifth day. Early in the second week, or at the end of the first week, the fever falls, often with profuse sweating, and convalescence is established. In this abortive form, relapses may occur, and may occasionally prove severe. When typhoid prevails extensively, these cases are not uncommon."

It will be seen, then, that Professor Osler recognizes the fact that a great many cases of fever now known to be typhoid used to be called by other names, as bilious attack, febricula, slow fever and so on.

Hereafter, during a severe epidemic of typhoid, it will be well to remember the statements of Professor Osler, as it will enable us to account for very many irregular cases that might otherwise be very puzzling.

DISCUSSION ON DR. BRITTAIN'S PAPER.

DR. H. A. WEST: I am glad, Mr. President, to hear a paper of this kind from Dr. Brittain. The only thing which surprises me is the doubt he expresses when he says he "*thinks*" I entertain views upon this subject similar to his own. It seems to me that everybody ought to *know* where I stand. For more than ten years, first before the Galveston Medical Club, then, upon three different occasions, at the meetings of the state association, also at the Austin District Association, more recently before the Galveston County Medical Society, I have contended that the most important question before the medical profession in Texas was the recognition of the fact that, side by side with malarial fever, we have the wide-spread and frequent occurrence of typhoid fever, and that a large proportion of the so-called catarrhal fevers were, in reality, mild cases of enteric. I have, perhaps, wearied the profession by my earnest and reiterated insistence upon this position. The only excuse I have to offer is the intensely practical and important nature of the issues involved. For out of the name and diagnosis of the disease the treatment is evolved. It is radically wrong and detrimental to the patient with typhoid fever to dose him for weeks with enormous quantities of quinine, and the coal tar antipy-

retics. If the physician has no conception that he has the intestinal lesions of enteric fever to deal with, he is not likely to insist upon the proper dietetic and nursing regimen. But I have spoken, written and lectured upon this subject so often I feel a delicasy in again discussing it. It is sufficient now to say that the cold logic of facts, especially the results of frequent autopsies upon patients from my wards in the Sealy hospital, have settled the question beyond all peradventure. It is a source of profound satisfaction for me to know that the profession of the state almost unanimously indorse the correctness of my views upon this subject, an illustration of which is the paper you have just heard.

DR. J. T. O'BARR said he wished to make a few remarks upon Dr. Brittain's paper. He agreed with the writer, and also with the statement made by Dr. West as to the importance of a clear understanding of the nature of these fevers; for the degree of prophylactic measures put forth will depend entirely on our diagnosis. There was an outbreak of some twenty-five cases of continued fever in his practice last fall, during a very dry season, among a people who were very poorly supplied with water, mostly ground tanks and tub cisterns, and they very low. These cases, save one or two, were easily traced in their origin to the primary cases. A heavy rain, completely washing off the surface of the country, and changing the water supply, was attended by a cessation of the fever, proving, very conclusively, to his mind, the infectious nature of the disease.

DR. IRVIN POPE asked if there was not such a thing as catarrhal fever of the mucous membrane of the stomach, as of the nose and throat. He had indorsed, at San Antonio, what Dr. West had said as to the prevalence of typhoid fever, but he also believed in non-specific catarrhal fever.

DR. WEST admitted the occurrence of catarrhal fever, but held that the large majority of those so diagnosticated were mild forms of typhoid.

DR. SEARS admitted that there was typhoid fever in Texas, and perhaps more in Galveston than anywhere else. "We may have had typhoid fever up our way," said he, "for there was considerable continued fever there until lately, when we got good artesian water. The change in water may have changed the disease, but whether it has or not, we still have a good deal of continued fever. It may be typhoid, as Dr. West claims, but if it is, then he will have to admit that quinine cures typhoid, for that is the only medicine we give."

DR. WEST: "How long does it take to cure with quinine?"

DR. SEARS: "From one to two and sometimes three weeks."

DR. WEST: "Do you call that curing?"

DR. SEARS: "I do; don't you?"

DR. WEST: "No, sir; I call it surviving the treatment."

DR. SEARS then said the majority of cases recover within a week, but if they are not seen at the beginning, they may run a week longer, or even more. The patients have no typhoid symptoms. Quinine always cures them, and they are given enough to keep down the temperature—10, 20, 30, or even 40 grains a day, if necessary.

DR. SCHENK said he had had much experience with typhoid fever. He thought Dr. West's views were correct, but if all cases claimed to be typhoid were such, the typical typhoid charts given in the text books would have to be changed.

REPORT OF TWELVE CASES OF TYPHOID FEVER.

T. W. SHEARER, M. D.,

WALLISVILLE.

Daniels' Texas Medical Journal recently contained a report of eighteen cases of enteric fever, by Dr. West, of Galveston.

Our professional territory being adjacent, Chambers county, situated just north of Galveston, I thought it of value to corroborate his opinion, that an epidemic of typhoid fever existed in southern Texas. This, coupled with the fact that an epidemic of typhoid fever existed in Chicago, and many other northern cities, and that an increased number of cases existed throughout the northern states during the past season, together with the post mortem examinations, made by Dr. West, in which the characteristic intestinal lesions, about the illeo-cæcal valve, were found, ought to establish the fact that true enteric fever *can* exist in the south, and as an epidemic.

The piratical nomenclature that prevails, abounding in many meaningless terms, as "slow fever," etc., that are applied to this disease, should be discountenanced and abandoned.

The much abused *malaria* also enters as an important factor in this relation. Malarial disease has usurped, to a great extent, the office of the liver, in that it is the term used to describe all the vague and indefinite ills that afflict the human organism.

It is to be hoped that the era of ignorance in regard to typhoid and malarial fevers is past, and typho-malarial fever will, in the future, mean typhoid fever and malarial fever.

Patient toil, together with the use of a high power microscope, has made it a reality today, that if the baccillus typhosus is not the cause of enteric fever, it is a constant accompaniment of the disease. And in regard to malarial fever, the same may be said of the plasmodium of Laveran.

Having had a considerable experience with enteric fever in the northern states, I am convinced that there is a greater mortality in the southern states; partly on account of malarial complications and partly because the common people are not familiar with this disease, and it is an arduous task to enjoin proper feeding and care.

Of the twelve cases which I will report, without exception, all were genuine cases of typhoid fever. Although I had no opportunity to verify my diagnosis by post mortem examination of the three fatal cases.

Eight of the cases were white and four colored, and if we may judge from so small a number of cases, the colored race stands this exhausting disease far better than the white, all the deaths having occurred among the whites, two by serious complication or accidents, intestinal perforation and pleurisy, and one by asthenia.

Of the four colored cases, all were uncomplicated typical typhoid fever, ending in recovery in from twenty-one to sixty days.

Two of the white cases also passed through an uncomplicated course. Three had pleurisy, one resulting in pyothorax, and another in thrombosis of the left lower extremity, followed by periostitis and necrosis of the tibia.

There were, apparently, two relapses; one recovering, the other ending in death by asthenia.

CASE I. C. B.; age 28; male; American. Was an uncomplicated typical case of enteric fever. The fever subsided by lysis, commencing on the twenty-eighth day.

CASE II. Mrs. J. B.; age 25; American. The usual symptoms were present in this case, and during the third week a copious intestinal hemorrhage, almost sinking the patient in fatal collapse. Hemorrhage recurred in four days, but not so severe. The patient passed into convalescence, having suffered with cerebral symptoms considerably in the latter stages of the disease, finally developing symptoms of melancholia, from which she has since entirely recovered.

CASE III. O. S.; age 17; male; American. Presented all the symptoms of an ordinary case of typhoid fever of average severity. Was inclined to constipation. The case was prolonged, and when con-

valescent, upon the sixty-fourth day of the disease, intestinal perforation occurred, followed by collapse, peritonitis, and death at noon the following day.

CASE IV. J. H.; male; American; age 64. This case is of interest because of the age of the patient, the severity of the disease, and the many complications, finally terminating most favorably.

I saw this patient, for the first time, just after he had relapsed. All the symptoms of typhoid fever appearing in the relapse. He was so much reduced in flesh that he reminded me of the living skeleton—a case of progressive muscular atrophy I once saw.

The disease progressed in the usual manner, soon ushering in a complication in the shape of plurisy of the left side. This was a source of great annoyance throughout the subsequent course of the disease. Slight effusion occurred and was absorbed.

A condition resembling purpura hemorrhagica developed. The gums became spongy and bled. I was compelled to extract four teeth on account of persistent oozing of blood, and tampon the sockets. Hemorrhagic patches formed upon the arms and trunk, and bed sores gave us considerable annoyance. This was followed by thrombosis of the left leg, from the knee down being greatly swolen, and resulting in periostitis and necrosis of the outer aspect of the middle third of the tibia. This yielded readily to the ordinary treatment, and upon the eightieth day from the first attack he was free from fever and convalescent. Six months after the necrosis of the tibia healed, an abscess reappeared at the old site, and was evacuated. It is to be regretted that the contents was not microscopically examined; since, according to Orlow, Pean and Cornil, subsequent abscesses contain the baccilli of typhoid fever.

CASE V. J. S. B.; age, 50; male; American; of consumptive family. The case appeared at first to be a severe one of malarial fever, but finally developed typhoid symptoms, having the characteristic morning remission and evening exacerbation. Bowels constipated; no hemorrhage. At the close of the third week the temperature began to fall, and the patient apparently doing well. An increased bronchitis occurred, with an intractable hiccough, followed by pleurisy, pulmonary œdema and death.

CASE VI. Hazel F.; age, 20 months; American. This case is of especial interest on account of the extreme youth of the patient, and the severity of the case.

The case was first thought to be one of remittent fever, but soon undoubted typhoid symptoms appeared—diarrhœa, rose colored spots, tympanitis, characteristic temperature curve, followed by severe intestinal hemorrhage and bronchitis; later, pleurisy, resulting in pyo-

thorax, which was treated by open incision, evacuating one pint of pus. The wound discharged pus for about a week, then healed, and the little patient has now been well for some time.

CASE VII. E. B.; 11 years of age; male; American. From the beginning this case had a serious aspect. An evening temperature of 105° f., with a morning remission of 2½° to 3°, constant pain in the right illiac region, soon followed by tympanitis, rose colored spots, diarrhœa, with characteristic pea soup discharges. Any medical student could have made the diagnosis, so many symptoms peculiar to the disease were present. The patient's bowels were controlled with salol and subnitrate of bismuth, and a tablespoonful of chloroform water was administered every three hours day and night.

This treatment was used by Werner, of St. Petersburg, in 130 cases of enteric fever treated by him without a single accident. The treatment was based upon Behring's bacteriological researches, in which chloroform was found to destroy the baccilus of typhus fever.

The use of antipyretics, as acetanilid, etc., was abandoned on account of the depressing effect—producing a chill every time it was used in this particular case—and baths were given to control the high temperature. Not strictly according to Brand, but several baths were given daily.

Repeated intestinal hemorrhages occurred, which were controlled by ice, ergot, and hypodermics of morphine. It often became necessary to quiet the patient with Dover's powder. Sulphonal, or a hypodermic of morphine, was given to produce sleep.

About the twenty-eighth day some improvement was noticed, continuing until the fortieth day, when a sudden rise of temperature occurred without any apparent cause. The patient had been fed upon boiled milk, Bush's Bovinine, eggnogs and milk punch. From this time on, increased bronchitis occurred, and the patient died of asthenia, upon the sixty-fourth day.

CASE VIII. F. S.; age, 22; American; female. This was a typical case, somewhat prolonged, with annoying nervous symptoms. Terminated favorably.

If I wished to comment upon the therapeutics of typhoid fever I would give to drugs a secondary place in the treatment of the simple, uncomplicated disease—hygiene, proper dietetics, and hydrotherapy preeminently surpassing anything in the shape of drugs. But for many complications, drugs are of undeniable value. Ergot, in case of intestinal hemorrhage; salol and bismuth in excessive diarrhœa; bromide of potash, sulph-

onal, Dover's powder or morphine for nervousness or insomnia. All can attest their value. But I must confess I have been disappointed with carbolic acid, tincture of iodine, sulpho-carbolate of zinc, listerine and the great list of antiseptic drugs. If they have ever done any good in true enteric fever, I have never been able to discern it.

A STUDY OF THE FACTORS CONCERNED IN THE RECONVERSION OF PEPTONE INTO ALBUMEN.

JAMES KENNEDY, M. D.,

SAN ANTONIO.

MR. PRESIDENT AND GENTLEMEN: The subject with which this paper has to deal is the manner of the process and the products of digestion. With reference to the process of digestion a brief outline will suffice for the purposes of this paper.

The elements of nutrition with which the digestive functions have to deal are divided into two classes, viz: organic and inorganic. The changes effected by the digestive functions in the inorganic or mineral compounds are relatively simple in character, and are generally confined to the conversion of the substances into a soluble form so as to allow of their ready diffusion.

The organic compounds are very much more complex in composition than the inorganic compounds, and, in addition, suffer changes of a correspondingly complex character. The organic elements of food are divided into nitrogenous and non-nitrogenous. The nitrogenous class is represented by the albumenoids and proteids, and constitutes the most important class. The non-nitrogenous bodies are represented by the sugars and starches.

These substances are acted upon by the digestive ferments, and made to appropriate a molecule of water, and are converted into glucose according to the following reaction:

With reference to the proteids or albumenoids, the change seems to be almost identical, that is, so far as the appropriation of a molecule of water is concerned.

It now becomes necessary to consider the constitution of these substances. The composition of a proteid or albumenoid sub-

stance is represented by the formula C, H. N. O. S. Many varieties are included under this general formula. Most of these compounds are amides, which are acids in which amidogen (N. H.) has been substituted for hydroxyl (O. H.) The proteids are divided into seven principal classes, namely: 1, native albumens; 2, derived albumens; 3, globulin; 4, fibrin; 5, peptones; 6, coagulated proteids; 7, lardacein; and each class represents several modifications.

There are certain characteristics which serve in a general way to differentiate these several classes and there are certain reactions, more or less distinctive, by which the members of each group may be identified. It may be well to state at this point that while this is true in a certain sense it is also true that, owing to the uncertain composition of these bodies, we know of no means by which any one of them may be identified with that degree of certainty which characterizes the analysis of other bodies of more definite composition, i. e., the inorganic compounds.

The digestive ferments, which are the active and essential factors in the process of digestion, are nitrogenous bodies, they are of an exceedingly complex character, and, so far as my knowledge extends, have never been separated in an absolutely pure state, nor has their exact composition ever been accurately determined. This much, however, we have learned and can prove, that they are capable under proper conditions of causing a profound change in both the physical and chemical properties of all of the organic elements of nutrition.

The gastric juice, with its hydrochloric acid and its pepsin, acts upon the albumenoids in such a manner as to convert them into peptone, a substance capable of diffusing through an animal membrane; while the pancreatic juice, with its trio of ferments, is capable of effecting the same change in an alkaline medium, through the agency of the ferment, trypsin, which it contains, and is also capable of converting starch and cane sugar into glucose and of emulsifying fats by the aid of amylopsin and steapsin, which are also constituent elements of this secretion.

Now, the sum total of the products of digestion is represented by the blood, which contains serum-albumen, and certain reconstructive elements which have been elaborated by organs possessing the necessary functions. Chief among the constituents of the blood is albumen, which seems to constitute the *pabulum vita essentiales* of the body, and is derived from the proteid elements of food furnished to the digestive system.

If we follow the changes which an albumenoid body undergoes before it becomes serum-albumen, we find that the first transformation to which it must submit, in the presence of a digestive ferment, is the conversion into either acid, or alkali albumen, according to the portion of the alimentary tract in which it is found. The second change is into peptone, or diffusible albumen, and, after absorption, it again becomes albumen.

Now, if ordinary egg albumen, coagulated, be boiled with either acid or alkali, it may be rendered soluble, but it cannot be made to pass through an animal membrane by any means that we know of, save by being subjected to the action of one or the other of those complex bodies known as pepsin and pancreatine.

The generally accepted view regarding the composition of peptone is that it is a highly hydrated form of albumen, and inasmuch as an acid medium is required for the action of the first mentioned ferment and an alkali medium for the second, it would seem to us that the primary step in the conversion of albumen into peptone is effected by either one of these agents. It is quite probable, in either case, that the albumen combines chemically with the substance (acid or alkali,) and as an extra molecule or more of water is necessary to the stability of the compound, and this new compound, (soluble albumen,) being presented to a hydrolytic ferment, is induced to undergo a molecular transposition, which results in the breaking up of the compound, causing a further appropriation of the elements of water and a setting free of the acid or alkali element.

This theory seems to be borne out by the fact that a definite amount of the ferment, pepsin, say 1 grain, is capable of digest-

ing an unlimited amount of albumen, if the digested material be removed and the temperature, degree of acidity and proper dilution be maintained, and also by the fact that neither acid nor alkali is necessary to the existence of peptone after it is formed, and also by the further fact that a solution of acid-albumen will be precipitated by the addition of an alkali, or an alkali albumen by the addition of an acid.

Among the substances capable of being transformed into peptone are: Albumens, (native and derived,) the globulins, fibrin and lardacein, and the peptone resulting from the digestion of any of these substances always possesses the same properties.

When proteid substances are presented to the digestive secretions, they become at once transformed into peptone. The peptone is absorbed and is immediately changed into albumen.

Now, the question arises: By virtue of what factor or agency is this transformation effected? Can it be due to the influence of the absorbents themselves? It does not seem probable, inasmuch as a solution of peptone may be made to pass through an animal membrane without any change whatever in its composition. After having diffused into the vessels it comes immediately into contact with the blood, and naturally we would look for some element of that vital fluid to be the cause of the change. The blood is composed of a liquid and a solid portion. The liquid portion is an albumenoid fluid, the serum, while the solid part consists of corpuscles, red and white. The fibrin factors are also contained in the blood. It is a well known fact that the red corpuscles do, by virtue of their containing hæmoglobin, carry oxygen to the tissues of the body, and it would not be unreasonable to suppose that they exerted an influence in the process of transforming peptone into albumen.

On account of the fact that the hemoglobin enters into a loose chemical combination with the oxygen, I thought it possible that the transformation might possibly be due to a process of oxydization, and that the oxygen, being in such a loose state

of combination and yielded up with such facility, it might possibly be appropriated by the peptone. Experiments which I have made, however, lead me to believe that they played no essential part in the change.

In order to demonstrate the possibility aforesaid of natural oxygen transforming peptone into albumen, I added a solution of peroxide of hydrogen to a solution of peptone and boiled the mixture, but no evidence of the presence of albumen could be found in the mixture. I next placed a dialiser containing a solution of peptone into a vessel containing a solution of peroxide of hydrogen, and afterward tested for the presence of albumen, but not a trace could be found. Experiments with deoxidizing agents were performed with solutions of peptone, but in no instance could a trace of albumen be obtained.

The only other elements in the blood which might be capable of exercising any influence in the conversion of peptone into albumen are the white blood corpuscles and the fibrin factors (i. e., fibrinogen, fibrino-plastin and the fibrin ferment.) Since an intimate relation seems to have been proven between the white corpuscles and fibrin factors, it does not seem worth while to consider their possible influence in this direction separately. I proceeded, therefore, to obtain some fresh blood and a fresh solution of peptone, having obtained a solution of peptone by digesting the coagulated albumen of a hard boiled egg by means of pepsin and hydrochloric acid, and separated the peptone from any acid albumen which might have been present by means of dialysis. I obtained plasmine from the blood by means of the saturation method with magnesium sulphate, then prepared a solution of plasmine in distilled water and added a measured volume of this solution to a measured volume of peptone solution. In another tube was placed a volume of distilled water equal to the peptone solution, and added a volume of the plasmine solution equal to the amount added to the peptone solution, and then placed both tubes in the flame of an alcohol lamp and heated them to a boiling point. A precipitate of albumen occurred in both tubes, but the amount of precipitation

was larger in the tube containing the peptone solution than in the one containing distilled water and plasmine. The experiment was repeated several times, frequently with both beef and dog's blood. In every instance the same result occurred.

Plasmine, as is well known, is a compound substance, being made up of fibrinogen, fibrino-plastin and fibrin ferment, hence the experiment, although it seems to prove that plasmine is capable of reconverting peptone into albumen, does not show whether the reconversion is due to one or the other of these agents, or to all three combined.

I will state that I have not been able to precipitate paraglobulin from blood serum by the carbonic acid method, although I have attempted several times to do so. I did, however, obtain by the saturation method a substance which reacted with peptone just the same as plasmine. I have obtained from blood serum by means of saturation with magnesium sulphate a substance possessing a light brown color which was soluble in water and coagulated by heat. A solution of this substance gave the same reactions with a solution of peptone that were obtained with a solution of plasmine, viz: converted it into albumen.

Owing to the impracticability of separating the fibrin factors in the pure state, it is impossible to state which one of them is responsible for the change. There are very many difficulties attending the separation of these elements from the blood, for instance the difficulty of keeping the blood liquid for a sufficient length of time and the almost impossibility of washing the precipitate thoroughly on account of its great solubility in water, and last, but not least, the fact of the absence of any means within the range of our knowledge by which we can determine the purity of either one and its freedom from contamination by the other.

While I am strongly of the opinion that some one of what we call the fibrin factors is responsible for or plays a very important part in the conversion of peptone into albumen, I am conscious of the fact that my experiments were exposed to many

sources of error. To prove this fact thoroughly it would be necessary to make a quantitative estimate of the peptone and also of the coagulable constituents of the plasmine solution, and at the end of the reaction a quantitative determination of the coagulated albumen would then be necessary for an absolute verification of this theory. These determinations I have not been able to make, owing to the uncertain composition of such bodies and the present imperfect state of our knowledge.

Before concluding my paper I wish to emphasize the difficulties which present themselves in an investigation of the character of the one which I have undertaken. To begin with the substances with which we have to deal all belong to the colloid class of bodies, excepting peptone, which from its diffusibility may be considered to belong to the crystalloid class. Its reaction with alkaline cupric sulphate and its property of diffusing through an animal membrane, are the only tests of identification that we know of and on which any reliance can be placed. The remaining members of the proteid class are distinguishable by their failure to diffuse through an animal membrane and from each other, chiefly by their difference in coagulability with reagents or by heat. The degree of dilution by a solution of any one of these bodies has a potent influence in the application of the tests and lessens their value.

While the properties of the various factors concerned in the coagulation of the blood would seem sufficiently characteristic, the tests by which we determine their presence are very crude, inasmuch as we can never prove the entire absence of any one of them, or even approximate their relative purity. We may determine with comparative facility that a proteid substance is present in a mixture, but we can never determine positively which member of this great class of bodies we are dealing with, or whether there exist several instead of one. It is not at all improbable that post mortem changes in the blood, which rapidly ensue on its withdrawal from the body, causes an alteration in its elements. The difficulty of retaining the blood in a fluid condition is a very great obstacle in an investigation of this kind.

DISCUSSION ON DR. KENNEDY'S PAPER.

DR. DAVID CERNA: Dr. Kennedy has gone over the ground of his subject very thoroughly, and has conducted his investigation with much intelligence. There is one point to which I wish to call attention, and that is with reference to the coagulation of the blood, as referred to by Dr. Kennedy. Just what the most important factor in the production of this phenomenon is we are unable to positively say at present. It is true that we have many plausible theories, but few absolute facts, if any. Dr. Kennedy has spoken of fibrino-plastine, of the difficulty of separating it, and of its being a necessary factor in coagulation of the blood. Such is not really the case. Indeed, the same may be said in regard to fibrinogen and the fibrin ferment, so-called. No coagulation occurs until an inorganic salt is introduced, and it would seem as if such a salt were the chief factor in the clotting of the blood. The subject is one inviting the closest study and investigation, and I hope Dr. Kennedy will continue his interesting researches.

DR. KENNEDY: I wish to say, in reply to Dr. Cerna's statement that "it is a proven fact that only one of the fibrin factors is necessary for the blood to coagulate, and that an inorganic salt constituted the other essential element," that I disagree with the doctor to the extent of anything pertaining to this phenomenon being proven sufficiently to allow of its unqualified assurance. Any one well versed in chemical analysis, and especially if he has had experience in physiological chemistry, can readily understand the difficulties in the way of proving anything of the character absolutely. I have yet to learn of any method of separation of these substances (fibrin factors) which will insure the purity of one of them by the exclusion of the others, hence I can not understand by what means such an absolute conclusion could have been reached. The peculiar character of the precipitate, which forms in the separation of these bodies from the blood, always insures the entanglement of all of the other elements of the blood in more or less considerable quantities. There is again the impossibility of washing the precipitate free from them, on account of their extreme solubility. As to the presence of an inorganic salt being essential to the coagulation of the blood, I can not say that I dispute it, but I will say that I am not familiar with the experiments by which this can be proved. Dr. Cerna says that if blood be deprived of its inorganic salts it will not coagulate. But he does not tell us by what means the blood may be deprived of its inorganic salts without removing other elements at the same time. I am at a loss to understand how blood can be deprived of any of its elements and still be blood. I am inclined to accept the present solution of the phenomenon of blood

coagulation, which credits fibrinogen, fibrino-plastin and fibrin ferment with playing an important role, but I do not insist on the retaining of the nomenclature. To my mind, the term "fibrin factors" expresses our understanding of the process, which term is almost as vague as our knowledge of the complex bodies which probably occasion the phenomenon.

DR. CERNA: Dr. Kennedy has misunderstood me. I have said that from present evidence it *would seem* that an inorganic salt (sulphate of calcium, particularly,) were the chief factor in the coagulation of the blood. If I remember correctly, Freund has shown that the process of coagulation is always accompanied by an excretion of phosphates of the alkaline earths, and we know that fibrin contains a constant amount of such phosphates. Be this as it may, however, it is almost an ascertained fact that coagulable fluids do coagulate on the addition of these salts, and they do *not* coagulate in the absence of these salts. I will not occupy the time of the members of this association, (who would be more interested, perhaps, in the discussion of more practical subjects,) with an extensive consideration of the question at issue; but I will say, based on later investigations, that fibrino-plastin is *not* an essential factor, and that for coagulation of the blood to occur, the chief elements are fibrinogen, a fibrin ferment, and an inorganic neutral salt. In these statements I am supported by the drift of modern experimental physiology, especially by the researches of Green, Ringer, Sainsbury, and Hammarsten. I may add, however, that the point is far from being definitely settled.

REPORT OF TEN CASES OF MEMBRANOUS CROUP, WITH REMARKS ON TREATMENT.

I. E. CLARK, M. D.,

SCHULENBURG.

Within the last two years I have treated ten cases of membranous, or true croup, varying from four months to three years of age—five between four and twelve months of age, three between one and two years, and two between two and three years.

Of the history, pathology and diagnosis of these cases, I will have nothing to say, but will give in detail the treatments of two. All of them, except one, were treated as the first case I will mention.

In December, last, J. M. brought to my office a little boy, four months old, with a bad cold and sore throat, as he termed it. The child was a very fat and chunky little fellow. His pulse was rapid, weak and irregular, temperature 104 f., and in a comatose condition. When aroused, a wheezing cry, cold extremities, and cold, clammy perspiration were noted. The larnyx and tonsils were covered with a white, stringy exudation. I ordered three grains of turpeth mineral, (Hydrargyri sulphas flava.) The little patient vomited in two minutes after taking the dose, and a lot of the exudation was ejected. The dyspnœa was less, and the child not so somnolent. I ordered hydrarg. chloridum mite, half a drachm divided into two parts, one to be given at once, the other portion in two hours. I also ordered:

℞ Sodium hyposulphite.....2 drachms.
Aquae dist .....½ ounce.
Syrupi tolu. qs. ad. .....2 ounces.

Sig.—Teaspoonful every three hours, to begin five hours after giving first portion of calomel, and continue until next day,

when I would visit the child. Next day I found the little sufferer's condition much improved, but he was quite weak. I ordered hyposulphite of sodium continued, and the following prescription:

℞ Ammon mur.....1 drachm.
Syr. simplx .....½ ounce.
Liquor ammon acetat. qs. ad.....2 ounces.

M. Sig.—Teaspoonful every four hours. I also had the child rubbed over abdomen and under arms with oleate of quinine three times daily. The third day I found him convalescing nicely; discontinued the ammonium muriate, and ordered hyposulphite of sodium given three times daily until patient was thoroughly convalescent; also continued quinine oleate thrice daily. The patient made a rapid recovery.

The second patient was a puny little boy, one year and a half of age. Symptoms were about the same as in the former case, but were more intense, dyspnœa very great and cyanosed. I gave patient turpeth mineral, five grains, and after expiration of fifteen minutes, no emesis; repeated dose. After twenty minutes more had expired I introduced intubating tube, which relieved dyspnœa somewhat for a short time. The patient rapidly grew worse and expired four hours after I first saw him.

The remaining eight cases were treated as the first, with various doses, according to age, and all recovered.

I adopted the above mode of treatment some two years since, and have had very gratifying success, as the above record shows. Formerly I used potassium chlorate, tr. chloride of iron, tartar emetic, ipecac and alum, but not with the success that I have obtained by the treatment above mentioned.

Dr. Fordyce Barker in 1870 wrote an article in the American Journal of Ostetrics, advocating the use of turpeth mineral. Calomel has been used for the past hundred years in various doses by different authors, but I believe I am the first one to use hyposulphite of sodium. We all know that hyposulphite of sodium is a very powerful poison to fungi and other low

organic forms, and I think it has some special action on the blood, whereby it causes the exudation to become more liquified, and finally ceases to form on the larynx and tonsils. Dr. G. Polli suggested its use in certain diseases supposed to be dependent on a fermentation or zymosis in the blood. The remedy has been extensively administered in pyæmia, the so-called zymotic disorders and allied affections. With a view to its poisonous influence on the sarcina venticuli, which attends yeastly vomiting, it has been employed in that complaint. Its action on membranous croup is, doubtless, due to its antigermicidal properties.

The treatment that has been most successful with me, briefly is: 1, turpeth mineral; 2, calomel in large doses; 3, hyposulphite of sodium. Nutritious diet, with ammonium and alcohol as stimulants, when necessary.

SOME NOTES ON PNEUMONITIS AND ITS TREATMENT.

C. F. PAINE, M. D.,

COMANCHE.

MR. PRESIDENT AND GENTLEMEN: From time immemorial pneumonia has been the theme of discussion. It has perhaps been the subject of more theses than any other in medicine. It has, in fact, been the "opprobrium medicorum," so to speak, of the faculties, and it is said that a sigh of relief has been known to escape them when some other thesis was announced.

Now, I do not propose to enter upon the discussion of the etiology, pathology, etc., of pneumonia. They are too well known. And perhaps I should apologize for presenting this commonplace subject for your consideration.

It is fair to assume that nearly every physician has his mind made up as to the management of pneumonia. A plan of treatment satisfactory to himself, at least orthodox; yet there is some disagreement of opinion, and it is only fair to assume that if some are right others may be wrong.

If there be any truth in the mortuary statistics of this disease —and we get them from trustworthy sources—we are driven to the irrefutable conclusion that with all our boasted progress and advancement in the knowledge of the pathology of pneumonia; with all the light shed upon the subject by the painstaking microscopist, demonstrating the indisputable fact of the presence of the pneumococus and its pneumotoxine, which produces this disease; and they generating the anti-pneumotoxine, which produces the cure.

There is something radically wrong in the treatment of pneumonia. Statistics show that under the different methods of treatment which have been in vogue for the last half century or

more, including calomel, venesection-pyalism, tartar emetic and starvation, the mortalility has been the same, with the advantage, perhaps, in favor of the latter treatment. The question arises, how can we harmonize these results? Were our forefathers wiser than we? Were the methods pursued by them, which consisted of blood-letting, calomel and tartar emetic, based on more scientific principles than ours of the present day? or are our statistics inaccurate and misleading? We are inclined to the latter conclusion. The statistics of pneumonia, as is the case with all other diseases, are gathered from hospitals for obvious reasons, and for reasons which must be apparent to all, are misleading.

In the first place, in hospital practice the patients, as a rule, belong to the poorer class, are often dissipated, poorly fed, poorly clad, and hard worked, and as a matter of course more readily succumb to disease of all kinds.

Secondly. We are all aware of the fact that in hospital practice often a routine course is pursued, and every case gets the same dose, or takes his medicine from the same bottle. They do not get the watchful care of home while surrounded by friends.

In 1872–73, I practiced medicine in the hills of North Alabama, among a class of people who were hale and hearty, ruddy, and often plethoric. I observed and treated a great many cases of pneumonia, all of asthenic type. My treatment consisted of the administration of veratrum, aconite, quinine, and, in the latter stages, blisters and brandy. I rarely lost a case. I think I would be safe in saying that not more than one in twenty died. Veratrum was my sheet anchor.

In the fall of 1874, my health having failed, I went to New Orleans, and spent the winter in the great Charity hospital. Saw a great many cases of pneumonia treated by the same method, and exactly fifty per cent died. My confidence was, for a time, shaken, and it put me to thinking. I returned home and used veratrum with more caution, but with the same good results. I cite this bit of personal experience to show the difference in hospital and private practice.

Again, what physician in private practice has a mortality of 25 per cent? Yet, it is shown by statistics taken from the various hospitals of America and Europe, embracing the time between 1880 and 1890, the average mortality was 28 per cent. Another curious feature in this report is the fact that between 1822 and 1832 the mortality was only 10 per cent.

Again, I ask if these statistics be accurate, what kind of a showing does it present for modern therapeutics? Between these latter dates the blood-letting, calomel and tartar-emetic regime, which we now consider so disastrous, was in full force.

Leaving the subject of statistics, I wish to say a few words concerning the modern treatment of this disease.

Regarding it as a self-limited disease, and not a local inflammatory affection, as formerly, the different stages representing only local manifestations of a constitutional malady, with the tendency to death from exhaustion or heart failure, the indications for treatment are clear and plain. As a rule, I do nothing that will in anywise compromise the strength of my patient. A mild cathartic is usually given in the first stage, generally calomel. This may be repeated when demanded throughout the course of the disease. Fever is combatted by the use of cold or warm baths—as is most agreeable to the patient—and these failing, I resort to some one of the coal tar derivities, cautiously given, and given only when the temperature exceeds 103 fahrenheit.

While I find a great many oppose their use, it must be admitted, beyond a doubt, that they constitute our most trustworthy antipyretics, and their use is not open to any objection not applicable to other antipyretics, including the cold baths, and I feel warranted in saying that the mortality of pneumonia has been greatly lessened. And this opinion has been sustained by experienced physicians with whom I have met. The reckless use of these remedies have caused some very competent physicians to repudiate and abandon their use. I wish to reiterate, that when used cautiously, they not only constitute the best means we have of controlling temperature,

but they add greatly to the comfort of our patient, a point well worthy of our consideration. Opium is, of course, the only remedy when pain is excessive.

Often hot, stimulating applications over the affected side will give relief and enable us to dispense with opiates.

When expectorants are called for, I know of nothing that equals the iodide and chloride of ammonia in small and often repeated doses. These may be dispensed with syrp. scillae or other suitable vehicle. After the first stage is past, and regardless, often, of the stage of the disease, it becomes a matter of importance to begin to husband the strength of your patient, and especially to look well to the heart's action. I regard the pulse of vastly more importance than the temperature. Here I will digress to say that in my experience the gravity of the disease is not in proportion to the amount of the lung involved, as is proven by the fact that some cases wherein both lungs have been extensively involved, have made recoveries, while others having only one lobe implicated, succumb in spite of all treatment.

Cardiac stimulants are sometimes early demanded and present an interesting study. Alcohol, in my opinion, stands at the head of the list. Digitallis probably ranks next, though Prof. J. A. Larabee, of Louisville, Ky., in a paper read by him before the Louisville Medical Society, sounds a note of warning and says that in over distention of the right heart, digitalis should be used with caution, if at all, as by contracting the arterioles and arteries it throws the blood back upon the heart itself, and the very condition which is killing the patient is rendered more severe by such an agent, and asks, is it philosophical to attempt to relieve by "vis a tergo," or is it more rational to attempt relief by a "vis a fronte?"

In the stage of hepatization, when we have an over-distended right heart, which is already fagged out, it looks reasonable that digitalis could do no more than spur it on for a short while when failure will be inevitable.

Strophanthus seems to me to possess some advantages over

digitalis, in that it does not contract the arteries and arterioles. Then caeffine and nitro-glycerine are remedies of no mean repute and are often relied upon to tide our patient over the "crisis." But above all, when cardiac failure is threatened, do not lose sight of alcoholic stimulants. Large doses are often well tolerated.

Of some twenty or more cases treated the past winter, I have seen only one fatal case. This was a stout young man. I saw him on the day of the initial chill. I saw him from two to three times a day thereafter. Had very competent consultation in my friend, Dr. C. F. Rogers. He died on the ninth day, of cardiac failure, notwithstanding alcoholics were freely given, with increasing doses of digitalis, strychnia and other cardiac stimulants.

I believe this was a case where blood-letting, properly done at the proper time, would have saved the patient; at least, it appears rational.

I know I am approaching dangerous ground, and will desist from further remarks on the subject.

DISCUSSION ON DR. PAINE'S PAPER.

DR. J. S. PRICE suggested that the subject of counter-irritation, which the doctor fails to use in the first stage of pneumonia, is an important point, as recent experimental research, conducted by exciting pneumonia in rabbits, shows, beyond doubt, our ability to jugulate the inflammatory process. This can be done with but one counter irritant, and that is mustard, which, when applied over the inflamed area, produces, by its specific effect on the vaso motor constrictor nerves, a decided anemia in that portion of lung over which it is applied. This effect is produced by carrying the irritation to a point short of blistering, and by so doing we are enabled to reapply the counter irritant, thus constantly driving the blood laden with the diplococcus of pneumonia away from the point of least resistance.

DR. DAVID CERNA said he was much interested in Dr. Paine's paper. It was practical, and called for full and free discussion. The usual remedial agents employed in treating pneumonia were: digitalis, the

coal tar products and alcohol. He would consider these. He agreed that, though the disease was in the lungs, the danger was in the heart. From the very beginning it was the physician's duty to watch the heart. Too much stress could not be laid on this point. Cardiac stimulants were the most important remedies, especially alcohol and digitalis. He warned his hearers against the use of the coal tar derivatives. Every one of them is a cardiac depressant, antipyrine especially so, as it was a poison to heart and vessels. The fever should be treated otherwise, as with cold baths. The use of antipyrine was simply murderous. Alcohol should be used only at the beginning, while the heart is in good condition; not in later stage, when heart is weak from over work. Large doses would then be required to produce any effect, and they would be ultimately depressant rather than stimulating. Digitalis should be used from beginning to end. It stimulates the circulation, and is also a food to the heart itself. No other drug feeds the heart muscle except, perhaps, strophanthus and caffeine. Hence, digitalis is the best drug in the materia medica for the disease in question. It should not be used in homœopathic doses, as, used in this way, it is cumulative in action, and thus becomes dangerous, if not fatal.

DR. KNOX said he could generally get along without drugs in the treatment of pneumonia. The disease was self limited. The only stimulants he used were quinine and ammonium carbonate. He used dry poultices in the form of a cotton jacket covered with oiled silk. The moist poultice exposes to draughts, and was liable to do harm.

DR. CHRISTIAN said the physician's first duty was to relieve suffering. Digitalis might be a good cardiac stimulant, but he regarded food as the best of all stimulants. The country physician's chief difficulty was to get the right kind of food, and to have it prepared the right way. As a rule, they had to get along with milk and liquid preparations put up by manufacturing chemists. Cold water is one of the most powerful heart stimulants we possess. He narrated the case of a man of 21 years of age whom he had been called to on the third day of the disease. The right lung was as solid as liver up to apex, pulse 120, temperature 103°. Both pulse and temperature were higher than they had been a short time before. The patient was eagerly wishing for a cold bath, which his friends had been previously using. He administered a dose of morphine, the patient soon became quiet, the pulse and temperature went down, and sleep supervened, which lasted four hours, after which temperature was 102°, and pulse 113. He might sum up the whole treatment of the case as consisting of feeding, cold baths, morphine and compound syrup of squills. On the sixth day the patient was free from pain and fever, sitting up in bed, and on the high road to recovery.

DR. SHEARER said digitalis was the best cardiac stimulant in a general way, but in some cases others act better. Digitalis slows the heart and energizes its action. Wherever it does not do well, convallaria majalis will do better, and sometimes cactus grandiflora answers well. Digitalis was too slow in action for immediate use, but it answered well when administered hypodermically.

DR. DENTON said he had had much experience with pneumonia, and he agreed entirely with Dr. Christian as to the importance of feeding. Other things were of secondary importance. He had lost faith in drugs except, perhaps, carbonate of ammonia at the end. He had used digitalis for twenty years, and had never been able to see any pronounced benefit result. He considered alcohol useful, but he always gave it as milk punch or egg nog; never in its pure state. Had seen harm result from it when given pure in typhoid fever. It interferes with the digestive power of the stomach. Pneumonia he considered self limited, and it is the physician's duty to conduct the patient safely throughout. He has lost confidence in medication by drugs.

DR. J. W. MCLAUGHLIN said he did not have the pleasure of hearing Dr. Paine's paper, and could not, therefore, speak to it, but he wished to call attention to some points in the treatment of the third stage of pneumonia, and, especially, to express his dissent from certain statements by Dr. Cerna. He did not think Dr. Cerna was correct in his pathology, when he says that heart failure, which is so prone to occur during this stage, is a result of overwork of the heart. His own clinical observation coincides with those who contend that toxic influences are those which bring about this condition; that poisons which result from tissue metabolism, induced by the action of pneumococci, are the true causes of heart failure, and a poisoned, rather than an overworked heart, is the condition that demands therapeutical attention. Strychnia, therefore, antidotes the inhibitory action of this poison, is a remedy of the first importance, and he would add this agent to the two drugs mentioned by Dr. Cerna, viz: alcohol and digitalis.

DR. BELL indorsed Dr. Christian's views in regard to the treatment of pneumonia. The first thing was to relieve pain and temperature, and then support the patient's strength by nourishing food. He had not given digitalis in cases recently treated by himself. He used quinine, when indicated, and resorted freely to topical use of cold water. He used ice over affected lung till pain was relieved. The cases he had in mind were children, and he noted the fact that when pain returned, the child would call for the cold application. He had them sponged frequently with cold water. He depended entirely on food to support the heart's action, and was not disappointed.

DR. L. ASHTON was much interested in Dr. Christian's remarks in reference to cold water. He thought there was little danger of overdoing it. In great œdema of lungs, he said there was nothing to equal the lance and free blood-letting. He had seen it proved repeatedly. A hypodermic of strychnine gives good results; also, morphine, similarly used. "But," added he, "we cannot hear too much of the use of cold applications.

DR. CUNNINGHAM said cold water afforded the best means to relieve pain, but, in the beginning, it should be used cautiously. Cold water, when the patient is not accustomed to it, may cause a shock, and thus do harm. The patient should be gradually accustomed to its use, and then it might be used freely.

DR. PAINE said that, in his paper, he wished only to bring out prominent points. He took it for granted that every doctor knew the importance of feeding. He has always used digitalis; also, morphia and strychnine. He thought, however, that a too free use of digitalis in the later stage might give us a little more heart, but a little less patient. As to alcohol, he always gives it diluted in whatever form patient prefers. If alcohol be used from the beginning, by the time the later stage is reached, tolerance is established. As to coal tar derivatives, he used cold or warm water, as preferred by patient, and when this fails to bring down temperature, he resorts to phenacetine. As to the use of medicinal agents, he thought no intelligent physician would resort to them when not needed; but, on the other hand, he did not see that they ought to be withheld when the need for them was apparent. As to blood-letting, the meeting would note that he touched upon the subject, but deeming it dangerous ground, he did not go as far as he wished to go, and he was now sorry he had not gone more fully into the subject. Finally, he said that, while he left the choice of cold or warm water to his patient, he found it a difficult matter to use either in country practice.

GENERALIZATION OF CANCER OF THE STOMACH.

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Aside from the influences produced directly upon the tissues in which it grows, and often dominating the clinical course of the individual case, the capability of generalization of a neoplasm demands the most careful consideration. To such an extent, in reality, is this true, that in the minds of a not inconsiderable proportion of the profession the terms "malignancy" and "metastasis" have come to be almost synonymous; the elements of local destructiveness, of location and size of the tumor, being nearly left out of view. With the modern materialistic conceptions as to tumor ætiology, there can be theoretically no generalization save such as is amenable to mechanical laws; and, clinically, such laws need in no wise be exceeded in explanation of the spread of malignant growths. While perhaps it may be regarded as of questionable value to call attention to the generalization of so locally serious a new growth as cancer of the stomach, which by no means depends upon its metastatic power for its fatal effects, the modifications of the clinical aspect depending upon the mode of generalization in one or two cases which have occurred within the writer's experience during the past several years, have suggested the utility of such an inquiry.

The possibilities of extension of a tumor process from the primary focus of formation are threefold—(a) by direct extension; (b) by transferrence by the blood; (c) and by transferrence by the lymphatic circulation. It is probable that, in exceptional instances, a much larger number of tumors than those which are commonly classed as malignant may, in some degree,

at least, exhibit disastrous tendencies which might fairly be considered under such captions as these; but of all tumor formations, only the sarcomata and cancers, as definite groups, can be held as uniformly malignant by transferrence. For purposes of definition and the maintenance of a basis of study, it is held by various pathological authorities that there exists a difference in the modes of extension of these two neoplasms; that cancer is infiltrative to a marked degree, and that sarcoma is not; that cancer is metastatic by the lymphatic circulation, and that sarcoma spreads by the blood. This is, however, but a relative statement, and one is unlikely to find any competent authority who denies a variation from such a rule. It is true that the cancers do show a broader zone of infiltration about the peripherally growing growth, but the more rapid vegetative tendency which is met in sarcomata readily explains their narrower zone of infiltration, by the quick and pressing extension of the tumor mass toward its invading particles. The question of hæmic or lymphatic extension is dependent upon no specific or intelligent participation of the tumor, but rests solely upon the relations of the tumor elements to the blood and lymphatic vessels. The facts that as a rule cancers arise in structures in which, in conformity to the functional demands of the part, there are numerous lymphatic channels, that these lymphatic channels are generally more spacious than the blood capillaries, which they often accommodate, that the epithelial elements of the cancer are larger than the blood corpuscles, which are often permitted only a somewhat difficult passage through the capillary blood vessels, must suggest why, as a rule, metastasis of cancer takes place by the lymphatics. The facts that sarcomata arise in connective tissue structures, in which tissue blood vessels almost invariably exist, and of which their walls are largely composed, that the more metastatic sarcoma elements are relatively nearly the size of the corpuscles which the blood vessels convey, are sufficient to suggest why these tumors, rather than cancers, should be generalized by the blood. Conversely, however, when because of propinquity to such, a cancer is enabled

to invade a blood vessel whose lumen will permit the progression of the cancer cells, cancer as well as sarcoma may show hæmic metastasis; and it is a rare thing to encounter a sarcoma in which no lymphatic invasion may be discovered.

In the observation of the peculiarities of metastasis of a cancer seated primarily in such a structure as the wall of the stomach, where from the thinness of the wall relatively large blood vessels must of necessity lie close to the infiltrating growth, where the functional necessities of the viscus demand, and are accorded, a free lymphatic arrangement, and where, from mechanical causes, approximation of neighboring organs should prevail, in such instance, attention should be paid all three modes of generalization possible to the tumor. Moreover, the possibility of the implantation of the tumor particles, dislodged from the cancerous surface and carried along the intestine, with subsequent formation of secondary nodules in the intestinal wall, should be held in mind.

That in this or that instance there should fail one or more of these methods of transferrence, that occasionally there be no apparent extension from the primary tumor in the stomach, is to be explained by histological peculiarities of the growth or by circumstances of position. The stomach may be the seat of origin of scirrhous, of medullary or of colloid cancers or of cylindrical epithelioma. From direct extension from the flat-celled epithelium of the œsophagus, squamous epitheliomata may also be found in the cardiac end of the viscus, but are little likely to give rise to metastasis other than to the lymphatic glands in the immediate vicinity of the œsophagus. Their presence in the stomach being distinctly due to extension and not to primary localization there, these are scarcely relevant to the present subject. Of primary cancers of the stomach, the following may be regarded as the order of the malignancy by metastasis (Welsh, *Pepper's System of Medicine*): medullary cancer, cylindrical epithelioma, scirrhous cancer, colloid cancer. In a group of sixty cases of cancer of the stomach, collected from records of the Philadelphia Pathological Society (*Trans. Phila. Path.*

Soc., vols. 3–15, exclusive of vol. 4), and from personal records, of 22 soft cancers, 15 (68 per cent) were found to have given rise to metastatic foci; of 28 hard cancers, 12 (42.8 per cent) were productive of secondary tumors; of 8 colloid cancers, 3 (37.5 per cent) gave metastasis; and of 2 columnar epitheliomata, 1 gave metastasis, while the records fail as to the second upon this point. Of the entire group, 31 (51.6 per cent) gave origin to secondary tumor formations. This proportion is somewhat smaller than that which would be deducted from larger groups of cases. Welsh (*loc. cit.*), from an analysis of 1574 cases (collected from Haberson, Lebert, *Transactions of New York Pathological Society*, and Gussenbauer and von Winniwarter) giving the proportion as 63.4 per cent. Other writers assign as low as 50 per cent (Fox, *Reynold's System of Medicine*), or as high as 75 per cent (Ewald, *Diseases of the Stomach*, Amer. ed., p. 174).

The probable reason for the ready transferrence of the *medullary cancer* lies in its highly cellular and loose structure, the ease with which the submucous and subserous lymphatic spaces are gained by the cancer elements and the rapid tendency to degeneration and ulceration, with the consequent opening of the blood vessels to the entrance of the tumor particles. On the other hand, in the *scirrhous* variety, epithelial formation is proportionately much lower than in the previous form, and fibrous tissue formation in the predominance. The lymph spaces in the vicinity of the growth are thus diminished from the cicatricial contraction of the newly formed fibrous tissue, the cancerous alveoli and penetrations are more thoroughly hemmed in and enclosed by the fibrous stroma. For these reasons, escape of the cancer cells from the primary focus is the more difficult. Precisely why *colloid cancer* is less metastatic than either of the above, is debatable, but the frequent failure of the usual positions of metastasis (liver, lymphatic glands and thoracic organs), and the frequence with which one encounters peritoneal penetration and transferrence, suggests strongly the credibility of that view, which holds that the enlargement of the epithelial

cells by colloid metamorphosis, with the acquirement of a certain degree of viscidity and consequent tendency to agglutination, should be held to account for such peculiarity. While from the insufficient evidence afforded by the group of sixty cases quoted by the writer, one is unable to justify the high rate of metastasis accorded the *cylindrical epithelioma*, it is very probable that the assertion of Welsh, that it ranks with the soft cancer, is justified; and from the highly metastatic nature of similar formations in the ileo-cæcal region, it may be fairly assumed that, in spite of this failure of evidence, these growths are not much less metastatic than the medullary carcinoma.

Only in the softer, ulcerating growths would one expect to find, and that with little confidence, metastases along the mucous membrane of the intestinal canal, implantations of portions of tumor tissue carried along the intestine with the contents.

While by far the greatest number of metastatic growths arise from pyloric cancers, (20 out of 31 cases,) the greater frequence of the pylorus as the seat of the primary tumors (45 out of 60 cases) is ample to explain such predominance in gross numbers; and moreover, an examination of the fifteen cases arising elsewhere in the stomach than at the pyloric region, shows that eleven were followed by secondary tumors, indicating a higher malignancy by metastasis for tumors of the cardiac end and the body of the viscus than for those of the pylorus (in proportion of 80 per cent: 64.5 per cent, respectively). By direct invasion, the position of the primary growth must, to a certain extent, control the extension of the tumor to neighboring parts, the tumors in the pyloric end of the viscus giving rise more frequently to hepatic metastasis and hepatic symptoms, tumors of the smaller curvature being more likely than those of the greater to adhere to and perforate the diaphragm, tumors of the cardiac end being more likely than those of the pyloric to directly invade the spleen; yet aside from these considerations there would seem to be but little influence in the position of the primary growth in the stomach upon the position of the secondary tumors. Thus, out of the twenty-three instances of hepatic metas-

tasis in the group under consideration, fourteen arose from the forty-five pyloric tumors, and nine from the fifteen tumors growing elsewhere in the stomach than the pyloric region, thus fairly maintaining in the liver the relative malignancy of the tumors of these two locations. Involvement of the cœliac glands, of the glands in the gastro-hepatic, gastro-colic, gastro-splenic omentum, and elsewhere, is recorded in twenty-one cases, (although it is very probable that because of faulty observation and faulty records this proportion is much too small) thirteen cases of which were furnished from the forty-five pyloric cancers, eight from the tumors in the cardiac end and body of the stomach. Beside the liver and lymphatic glands, there are named as positions of secondary tumors in the group under consideration, the pancreas, the spleen, the lungs, the pleura, the peritoneum, the skull, abdominal walls, heart, and thoracic duct; and there are recorded instances where the subcutaneous tissue (Finlay, *Trans. Path. Soc. London*, vol. 34; Keiller, personal communication) was the seat of multiple secondary tumor formation, as well as the kidneys, suprarenal body, brain, ovaries, and other situations. Welsh (*loc. cit.*) names the following as the order of frequence of the various parts of the body as foci of metastatic growth (from the 1574 cases cited above with addition of statistics of Dittrich, Wrany, Katzenellenbogen and Lange): lymphatic glands, 35 per cent; liver, 30.2 per cent; peritoneum, intestine and omentum, 22.7 per cent; pancreas, 7.8 per cent; pleura and lung, 7.8 per cent; spleen, 1.7 per cent; brain and meninges, 0.6 per cent; other parts of the body, 5.8 per cent. In the sixty cases, subjects of the present analysis, the lymphatic glands were invaded in 36.6 per cent; the liver, 33.3 per cent; the peritoneum, omentum and intestine, 8.3 per cent; the pleura and lungs, 8.3 per cent; pancreas, 13.3 per cent; spleen, 6.6 per cent; the heart, 1.6 per cent; other parts of the body, 3.2 per cent; this group showing decided concordance with the larger compilation of Welsh.

The paths of metastasis are to be attended to in inquiries into the results of extension. Recalling the usual position of the

primary growth as beginning in the mucous membrane in the glandular cells of that structure, it is easily accepted that upon even slight development the tumor finds itself in a loose, easily invaded tissue, the sub-mucous connective tissue, rich in lymphatics and blood vessels. The blood circulation of the wall of the stomach finds its afferent vessels in the gastric, pyloric and branches of the splenic and hepatic arteries. These ramify through the sub-mucosa largely, sending capillary branches into the mucous membrane about the tubular glands; from these capillaries arise venules which pursue a straight course back to the sub-mucous connective tissue, where they freely communicate and terminate in the splenic and portal veins, the former eventually joining the latter before its entrance into the liver. Any tumor particles, therefore, which are borne beyond the gastric structures in the blood circulation. are almost unavoidably carried into the liver, lodging usually in the terminal portal areas. While, as a rule, the lesser curvature of the stomach is almost entirely drained into the portal vein, occasionally the coronary vessel fails to communicate with the latter, but empties into the ascending vena cava, thus affording occasional transferrence by blood channels to the right heart and to the pulmonary capillary area without the intervention of the liver. Carried into the liver, the tumor particles are lodged as emboli, the free anastomotic condition of the vessels of the organ accounting for the rarity of the common results of embolism. The embolism determined, the new tumor focus develops with time, and the presence of the mass, a foreign body in the vessel, excites proliferative changes in the endothelial lining; the entire wall taking part, to a greater or less extent, in the reactive inflammatory process, which results in encapsulation of the intravascular focus, the capsule continuing to form as the growth advances in size.

The existence of such intravascular formations is readily proved in auspicious cases, if one will carefully remove a small encapsulated mass, detaching the surrounding liver structure and laying open the capsule, when it is sometimes possible to

locate the plugged vessel by its lumen patent on the inner aspect of the capsule, or more or less occluded by a blood clot. The formation of thrombi in the portal vein or its forming branches, as described by Spaeth (*Virchow's Archiv.*, Bd. 35, p. 432), and others, is in line of testimony favoring such a view. Where hæmic transferrence to the liver obtains, as a rule the organ is plentifully and generally involved by secondary nodes. As long as these nodes are held within their capsules, there is little danger of further progression; but in case of the softer and more rapidly growing varieties, this does not long continue, and the tumor particles find their way into the central veins of the lobules and thence into the hepatic veins. Or by continued growth and infiltration, the walls of some branch of the hepatic vein may be penetrated, and thus rapid progression beyond the liver be acquired. As a rule, the secondary nodules are not found within the liver lobules, but in the interlobular zone, whence, by direct growth, they penetrate, destroying by pressure *en masse* or by infiltration the hepatic tissue of the lobules adjacent, and eventually gaining entrance into the hepatic venules (Shakespeare, *Trans. Phila. Path. Soc.*, vol. 7). If a particle of tumor tissue of some size be dislodged from the primary growth in the stomach, it is, of course, liable to be lodged in the larger branches of the portal vein, near its point of entrance into the liver, near the lower surface of the organ. Such growths are less apt to find a ready encapsulation and spring into active and perceptible growth more readily than a minute mass of but one or two cells. There is in this case, therefore, greater liability of pressure upon or invasion of one or more of the larger biliary ducts, causing obstruction and consequent jaundice, than would ordinarily be likely. Placed in this position, these secondary nodes are liable to give further metastasis through the lymphatic channels of the inferior surface of the liver, channels which find relatively little communication with those of the convexity. It may, therefore, be inferred that in cases of suspected secondary hepatic carcinoma with jaundice, the lower surface of the organ will be found invaded by the new growths rather

than the convexity, although the infiltration may be general. Obstruction of the larger portal vessels, while rarely, if ever, complete, is often sufficient to induce enlargement of the superficial abdominal veins as a compensatory phenomenon, and the development of an ascites characterized by a clear serous or bile-stained serous fluid; and symptoms of such a nature should be regarded as suggestive of metastatic deposits rather on the under surface of the organ than on the convexity. The free communication of the lymphatics of the lower surface of the liver with those of the gall bladder and gall ducts, suggests another reason why involvement of this particular part of the organ should give rise to visible sign.

Following the possibilities of extension from the liver by the blood current, the right heart, after the hepatic veins and ascending vena cava, is the first liable seat for tumor formation. This is almost invariably in the auricular appendages, if at all; after the heart, the pulmonary capillary area is likely to restrain the moving tumor cells, and far more frequently than the heart, becomes the seat of metastatic foci.

Escaping from the liver by the lymphatics of that organ, the most frequent seat of metastasis is in the glands of the gastro-hepatic omentum, superficial areas of both superior and inferior parts of the organ draining into these. From the greater portion of the superior surface the lymphatics find their way into the anterior mediastinal glands, and in cases where there is widespread hepatic involvement, these glands should be examined for secondary deposits. From the right side of the lower surface of the liver the lymphatic stream is directed toward the lumbar or cœliac glands, into which eventually the vessels from the gastro-hepatic omentum also find their way, and as a consequence these structures are frequently the seat of metastatic enlargement. From the left side of the lower surface of the organ the lymphatics, in a general way, communicate with those of the lesser gastric curvature and of the œsophagus and posterior mediastinum. Inasmuch as this area, more frequently than any other in the liver, is the seat of direct cancerous inva-

sion from the stomach after adhesions have been formed, these glands are very frequently found involved. The middle area of the lower surface, that including the cystic area, drains into the gastro-hepatic omentum and thence into the cœliac glands. The lymphatics of the interior of the liver constantly lie in relation with the branches of the portal vein, the bile ducts and hepatic artery, and emerge from the organ at the transverse fissure, communicating with the glands of the lesser curvature of the stomach and those of the œsophagus, eventually emptying into the thoracic duct either before or after passing through the diaphragm. On rare occasions, the growth may occlude the thoracic duct, and, as may be inferred from what has been pointed out, such a possibility is especially to be feared in case of general involvement of the deeper parts of the liver or of the lower surface of the left lobe. Twice during the past two years (only once, however, could it be verified by autopsy) has the thoracic duct been occluded, within the writer's experience, from metastasis from hepatic neoplasm, the ante mortem evidence of its existence depending upon an enormous chylous ascites in each case, the abdominal and mesenteric lymphatics being enlarged and thickened to the size of the little finger, or even larger. Failing of lodgment in the thoracic duct, the tumor cells are borne into the venous stream and find their way into the lungs.

While it is possible that in case of cancer of the stomach and intestine the growth should be most frequently generalized through the medium of the blood vessels from the ease of entrance of the tumor particles into the blood circulation, and their rapid diffusion in the blood current, and while probably many instances of glandular involvement are consequent upon secondary tumor growths elsewhere than in the stomach, dissemination through the lymphatics directly from the primary focus can not be doubted. In most instances the lymphatics of the stomach follow the course of the blood vessels; of necessity, therefore, confusion must result at times in case of glandular envolvement about the pylorus and in the gastro-hepatic omentum, whether the lymphatic enlargement proceeded directly from

the stomach or mediately by the hepatic route. The group of splenic glands are in connection with the greater number of the lymphatics of the cardiac end of the viscus, and thus afford occasional opportunity for glandular implication in the gastro-splenic omentum. A group of the gastric lymphatics of considerable importance, moreover, pass along the right gastro-epiploic vessels and empty into one of the larger lacteals and thence into the thoracic duct, thus providing a route for the entrance of tumor cells into the venous system and into the lungs without involvement of the liver—a mode of dissemination distinctly possible and noted in one of the group of cases analyzed, although denied by as well known an authority as Walshe, (*On Cancer.*) A mode of lymphatic generalization which must be of great importance is that of serous extension, best seen in secondary peritoneal carcinosis from cancers of the stomach or pancreas. In a case within the group cited, and in a case of primary cancer of the pancreas with multiple serous metastasis in the Pathological Museum of the University of Pennsylvania, this method of generalization could be excellently demonstrated. The primary tumor, in the first instance, had invaded the serous surface of the stomach, and minute particles becoming free in the peritoneal cavity were mechanically scattered by the intestinal movements over the endothelial surface of the peritoneum. Small tumors, under such circumstances, are found attached to the surface of the membrane, each held in a loose fibrous reticulum which apparently has arisen from a localized reactive inflammation about the tumor particles. Usually from gravity the position of these peritoneal growths is low down in the pelvis, although they may occur anywhere over the serous surface. Regarding the serous sacs, the peritoneal sac in this instance, as parts of the lymphatic structure of the body, as largely dilated lymph spaces, freely communicating with the neighboring lymph spaces and channels by the so-called "stomata," it is easily apparent why and how lymphatic involvement as low as the upper inguinal glands, the pelvic glands, the subcutaneous structures of the abdomen, the lumbar glands,

should become the seat of secondary tumor formation without the necessity of arterial generalization. It is probable that in this way should be explained almost all instances of organic involvement below the gastric lymphatic level, save in the rather rare cases where the arterial circulation is involved.

Either by direct invasion through the diaphragm or by invasion from secondary nodes in the glands in the anterior or posterior mediastinum, the parietal pleura may become the seat of further metastatic formations, which at first are to be found in the subserous tissue, but which presently appear upon the pleural surface as described in case of peritoneal carcinosis, small nodes held in a loose and delicate fibrous outgrowth from the endothelium of the structure—in much the same manner as the tubercular nodules are found in "*perl-sucht*" in cattle. Implantation from the parietal to the visceral layer of the membrane is apparently without much difficulty, and similar nodes and thickenings are soon found upon the pulmonary surface. The sub-pleural or superficial lymphatics of the lung afford a ready path for extension, which, from circumstances of gravity and priority of implication, is usually seen in greater degree in the lower portions of the organs. This process is well seen in a case of cancer of the stomach, the specimens from which have recently been received in the Pathological Museum of the University of Texas. The cancer, medullary in character, had given rise to wide spread pulmonary involvement, to cardiac, hepatic and glandular invasion. The pleura in this instance is distinctly thickened in many points, the elements of the thickening consisting of small foci of carcinomatous tissue in the subserous structures, and of connective tissue formation about them. At many points the microscope reveals imperfections of the serous surface, the penetration of the cancer being distinct. Where the cancerous tissue extends thus over and under the pleura for any great extent, it must necessarily exercise a marked influence to lower the elasticity of the lungs; and one can readily appreciate how, when the lung is thus encased, aside from the influence induced by the implication of the blood vessels and

bronchial tubes, marked symptoms depending upon failure of proper air exchange in the lungs, and consequent failure of aeration of the blood, upon the increased labor devolving upon the heart muscle (especially of the right side) should have developed in this case. From this cancerous encasement, from this superficial pulmonary lymphatic plexus, the cancer elements may be demonstrated in the case mentioned progressing along the widening perivascular and peribronchial lymphatics toward the root of the organs, thickening the blood vessel walls, lowering their pliability and thus adding another item of obstruction to the right heart, thickening the connective tissue trabeculæ and perforating into the air spaces and passages, giving rise to alveolar areas of consolidation, both of inflammatory and neoplastic character, and to bronchial irritation and catarrh. It can be easily understood how the pulmonary metastasis in this case should have given rise to violent irritative cough, induced by any attempt at full breathing, by talking or by swallowing; to a thin serous bronchial expectoration; to evidences of cardiac labor and cyanoses; to gradually increasing hebetude, stupor and coma; and to death by cardiac failure.

In the case alluded to, a woman beyond middle life, there had been symptoms of gastric disturbance and pain for some months prior to her admission to Sealy Hospital. At the time of admission, these were very pronounced, there was decided cachexia, and a tumor mass could easily be outlined in the region of the pylorus and head of the pancreas. An exploratory laparotomy was performed by Professor J. E. Thompson, who found the stomach encircled by a large, firm cancerous mass, with strong adhesions to the pancreas, left lobe of the liver and all the adjacent structures. Two weeks after this exploration, there began the thoracic symptoms mentioned, only to cease with death about one month later. The physical signs of the thoracic condition were very indistinct, considering the marked degree of involvement of the lungs, consisting merely of a diminished resonance, decrease of the respiratory murmur, lengthening of the expiratory note over the whole of the lower portions of the chest, and a few fine and scattered rales. The

lungs were involved more or less all over the surface, especially in the lower lobes, the cancerous tissue shining white through the pleura in large patches and enclosing the pulmonary tissue as in a box. From this subpleural cancer the growth extended into the interior of the organs along the blood vessels and bronchial tubes, while near the root of the lungs on both sides were several rounded nodules, as are frequently seen in extension of cancer to the lungs.

In addition to the above mode of pulmonary invasion, the possibility of hæmic metastasis through the liver or from the thoracic duct must be added, when intravascular implantations growing into rounded nodes, most frequently in the roots of the lungs, take place, these giving rise to less well marked phenomena than those described because of the relatively low functional value of the roots of the lungs. From either of these pulmonary invasions, through the bronchial lymphatics, or from extention from the glands in the posterior metastinum along the œsophagus, lymphatic involvement of the supraclavicular glands is possible, and should be sought for as a symptom of metastasis.

It is uncommon for the generalization to proceed beyond the lungs by the blood; even to reach as far as the lungs is exceptional. The possibility is, however, undeniable, that any portion of the system may become implicated by way of the arterial blood stream into which the tumor particles may, perhaps, gain entrance, most probably by direct penetration of a tumor mass into an artery, or less probably by extension from a pulmonary secondary tumor mass through the pulmonary venules. By such an explanation it is possible to account for the rare metastasis mentioned in one or two records to the head. It is a rule that where metastasis to any part of the head occurs from a tumor occupying a seat in the trunk or extremities, either that the tumor should have general metastasis, or that it should have been so situated as to make possible direct invasion of an arterial vessel going to the head, or have penetrated into the spinal canal and extended along the membranes of the cord.

SECTION ON OBSTETRICS AND DISEASES OF CHILDREN.

REPORT OF CHAIRMAN, IRWIN POPE, M. D.,

TYLER.

MR. PRESIDENT AND GENTLEMEN: It would be impossible in the time at my command to review all the literature of this subject. I shall, therefore, ask your indulgence while I briefly discuss the management of labor.

A most important question arises: When should the obstetrician be consulted? It is well for us to impress upon our patients the importance of being consulted early in the pregnancy, that the symptoms may be watched and serious trouble averted. The diet should be regulated; exercise suggested and insisted upon, and, as a matter of routine, the urine should be examined at least twice a month. I am satisfied by carefully attending to this I have avoided serious trouble. Then the condition of the breasts is an important matter, especially in primipara.

I will now call your attention to one thing about which our text books and professors are usually silent. Its importance cannot be over estimated. That is, to find out the position of the child before labor begins. When and how should this be done? About the eighth month is early enough for this examination. A digital examination is not necessary in primipara, unless we have reason to suspect a deformed pelvis.

By external manipulation we can ascertain after a little practice the relative position of the head and back of the child, as regards the mother, and thus be positive as to what position the child occupies.

In primipara, where we are in doubt, it is better to make a digital examination. Let me mention a case in point: I had

been engaged to confine a primipara; was called to see her about the sixth month, when a miscarriage seemed imminent. On making examination, found pelvis whose antero-posterior diameter did not exceed two and three-quarter inches. I informed the family as to the condition of affairs, and told them I thought it was better to let the pregnancy terminate. They insisted, however, that the woman should go to full term, if possible. After considerable trouble, the threatened miscarriage was stopped. On the following day, I discussed the question with the family, and again told them of the danger of the patient's going to full term. The wife said she would take the risk. At the seventh month the patient met with an accident, and as I was out of the city, another physician was called. As soon as he made an examination, he wisely decided to let the labor go on. He informed me that it was a difficult labor, and it was a mere mite of a child. Had this case gone on to full term, Cæsarian section, symphyseotomy or embryotomy would have been necessary. As soon as the patient is satisfied the labor has commenced, instruct her to take a large enema. This thoroughly empties the bowels and causes an evacuation of the bladder. It also relieves the post-vaginal wall of undue pressure from an overloaded bowel.

I do not object to being called early in the labor. The advantages are many. The most important is, we arrive before the waters are broken, and any malposition can be more easily corrected.

In one of my cases I was not called until after the waters had broken. The hand was presenting, with a tightly contracted uterus. To turn and deliver was no easy matter, and a dead child was the result. It is nothing less than criminal to make an examination without first thoroughly disinfecting the hands, no matter how urgently our patient may call. A few moments delay matters little, but a small amount of septic material matters a great deal. By disinfecting, I do not mean simply washing the hands with soap and water. A nail brush and a cake of soap are necessary articles in any obstetrical satchel. After

using the soap and water, soak the hands in some antiseptic, preferably, creolin. For anointing the hands, I use carbolated lanolin, or vaseline, which has been previously heated. If the position is all right, we can wait.

I would not advise, as a matter of routine, to use antiseptic douches prior to labor, unless there is a vaginitis.

The child delivered, expel the placenta by Crede's method. Do not be in too great a hurry about delivering the placenta. Allow at least a half an hour to elapse, and then, by a gentle pressure from before backward, the placenta will be usually expelled.

After the delivery of the placenta, it is of the utmost importance for the obstetrician to use the douche. He must remove all the clots from the vagina; he can then be in a better position to determine what condition the parts are in, and what damage has been done. It is not necessary, except in instrumental deliveries, or where the hand has been introduced into the uterus, to use intra-uterine irrigation. After using the douche, let no false modesty prevent a thorough examination. Repair any perineal tear by silk ligatures, and damage to the vagina, by cromacised catgut. If there is a laceration of the cervix, which may have to be repaired at some future day, inform the family. The patient may now be given a dose of ergot, or, as I prefer, ergotole. There should be no bandages on mother or infant. The uterus being firmly contracted, we may now turn our attention to the child. Examine carefully for any deformities, and if any are found, call the attention of the nurse to them, but say nothing to the mother. Have the child well greased with vaseline or lard. Wipe off and then dress. Drop one drop of a solution of nitrate of silver, five grains to the ounce, in each eye, or use a solution of boric acid, twenty grains to the ounce of distilled water. Use no elaborate dressing on cord. Have the mother changed and thoroughly cleansed. Keep cloths wet with an antiseptic solution applied to the vulva. The baby should not nurse for at least two hours. Antiseptic douches should be used daily, for at least two weeks. If the

perineum has not been torn, the bowels should be moved not later than the second day, by a dose of castor oil at night, and a warm enema in the morning. If the tear involves the bowel, wait until the fourth or fifth day. As an aid to recovery, and to anticipate any fever, give quinine for the first three days.

If there has been no hemorrhage, patient can change her position as soon as she likes.

It is advisable to have the patient assume the knee-chest position after the fifth or sixth day, and to remain in this position until a little fatigued. This relieves the strain upon the round ligaments, and I believe lessens the danger of retro-version. If nothing unfavorable happens, patient may sit up on the eighth day.

The baby should not be washed, but kept well greased.

Some of our æsthetic obstetricians may object to this, as may also the mother. I only ask them to try it, and see how well the baby flourishes. It is certainly more cleanly.

The reasons for not using water are numerous. Water will not remove the sebaceous substance from the infant, while it readily unites with vaseline or lard. Greasing keeps the skin soft; the baby does not chafe; hence no filthy chafing powders are necessary. To one who has seen a baby perfectly blue, shivering and crying, is it not a pitiful sight? It utters all the protest in its feeble power. Contrast this with the baby who is greased. It laughs and seems to thoroughly enjoy the rubbing. The child does not take cold and you are never called upon to do something for the baby's cold. To one who has never used this method, I ask them to try it.

A well managed case of labor insures your patient return to health and her everlasting gratitude, while a mismanaged case will be a perpetual nightmare.

That there are numerous cases where a little care and skill upon the part of the attending physician would have saved years of suffering, one has only to visit the gynecologist to find this is true. But with the better education of our physicians, and a practical course in obstetrics, which all first-class medical schools require, cases of neglect are not near so common.

Do you use chloroform in labor? Yes, as readily as I would in surgery; but not to complete anæsthesia, for it is not necessary. I do not think it as dangerous to give chloroform where the heart is affected, as to allow the patient to endure the long, exhausting pains.

The nervous system is strengthened by the short naps, and the irregular pains are stopped. I do not use chloral, for I have not been pleased with its action.

Another question which often puzzles the obstetrician in general practice, is when to resort to instruments. To most families, this is a thing which they dread. They have heard so much about meddlesome midwifery. When the child is not advancing, or the pains which have been strong are getting weak, patient seems to be getting tired, or when the size of the child, in relation to the pelvic outlet, indicates that nature cannot get rid of the uterine contents, then I would advise interference. The tendency has been toward supplanting craniotomy by Cæsarian section. The late improvements that have been made in Cæsarian section, together with the better results in abdominal surgery, have made the profession consider seriously whether or not it is better to remove the child by abdominal section, where we know its life must be sacrificed to remove it through the natural canal. This was mentioned at first with some timidity, but it is fast gaining ground. We must not be misled by the statistics of hospitals, where all the surroundings are of the best, and skillful surgeons perform the operations. Of course, it would be expected that the mortality in these cases should be small.

Cæsarians sections done outside of hospitals, unless successful, are seldom reported.

Cæsarian section, if done at all, should be done early.

The removal of the uterus with the section of the ovaries, or tying the tubes, is to be condemned, unless for good and sufficient reasons, such as where there is septic trouble or tumors are present.

Symphysiotomy is destined to take the place of Cæsarian sec-

tion, or craniotomy, in certain cases. It has many advantages over Cæsarian section, the most important is, that the consent of the family would be more readily granted than to a laparotomy.

From a paper read before the medical society of the state of New York by Dr. J. E. Kelly, "On the Anatomical Limitations of Symphysiotomy," I shall quote at length:

"The yielding of the cartilages after section was followed as the fœtus advanced by rotation of the pubic bones, upon those of the ossa innominata.

"After the tissues had been divided to the symphysis, the section should be from above downward and behind the symphysis, rather than upward and backward. By this method there was less danger of injuring the blood vessels which ran immediately under the symphysis. The increase of space was least in the antero-posterior diameter of the pelvis. As to the joints, the separation was least at the sacro-illiac synchrondrosis. An extreme separation of three inches at the symphysis was attended by a separation at the synchrondrosis of only three-sixteenths of an inch. The damage to the structures was not serious. The elasticity of the muscles and ligaments of the pelvis during labor could be counted upon as contributing at least half an inch to all the diameters as obtained by pelvimetry.

According to the statistics of Dr. Chas. Jewett, Brooklyn, N. Y., the operation had been performed in sixty-eight recorded cases since 1886. It had been done nine times in America in the last four months (since then I have seen two more cases reported). Of the seventy mothers, sixty-nine recovered. Very few injuries have been reported, and the recoveries have been as rapid as after Cæsarian section.

In the reported cases there had been all grades of deformities. The conjugate diameter ranging from $2\frac{1}{2}$ inches to $3\frac{3}{4}$ inches. The operation was applicable to diameters as low as $2\frac{1}{2}$ inches. And indications which had not often been mentioned were to be found in impacted mento-posterior face cases. It is contra indicated in cases where there was an ankylosis of the sacro-illiac synchrondrosis.

In the treatment of retained placenta, it is not worth while to wait the length of time recommended in the text books. If in two hours you are unable to remove by expression, and no hemorrhage has justified an earlier interference, then remove. Let the patient inhale chloroform. Disinfect the hand thoroughly; slowly introduce with the palmer surface towards the placenta; after getting above the placenta, seize it in the palm of the hand and slowly withdraw, making firm pressure with the other hand upon the fundus of the uterus.

In cases of abortion, or where a portion of the placenta is retained, use the curette and intra-uterine irrigation. If much hemorrhage follows, pack with iodoform gauze. In eclampsia, the preventive method is the best. If you have carefully watched your patient, you will anticipate and be prepared; for it has been shown that the kidneys are nearly always the disturbing element. Where the amount of albumen is great, we should watch closely, and very often we may find it necessary to induce labor in order to save the woman. In these cases the administration of chloroform should be guarded. Unless positive of the condition of the kidney trouble present, morphine had best not be used. Some consider chloral as a specific; antipyrine has also been recommended. Pilocarpine may be used. Goodell recommends venesection. In all cases, a rapid evacuation of the uterus is the proper measure. In puerperal septicæmia, the best method is to prevent it. By strict attention to asepsis and antisepsis, I have never had a case to occur in my practice.

But should septicæmia occur, use the curette under chloroform, so the uterus may be thoroughly scraped, intra-uterine irrigations of bichloride of mercury, or, as I would prefer, creolin. After this, we may pack with iodoform gauze, and, lately, laparotomy has been strongly advised. Great reliance must be placed upon tonic and supportive treatment, with large doses of quinine.

There are two things which play an important part in post partum hemorrhage—a general muscular weakness and an im-

poverished condition of the blood. Where the pregnant woman is anemic, give iron and strychnia. Pay close attention to the diet and see that sufficient out door exercise is taken. If there is a history of hemorrhage in prior labors, then have everything prepared, such as hot water, astringents and gauze. As soon as the child's head is well engaged, give 15 minims of ergotole, by hypodermic syringe. Keep the hand upon the fundus of the uterus. Make firm pressure, but do not hurry the expulsion of the child or placenta.

Lately I had a case in which a severe hemorrhage followed a miscarriage. Hot water failed to control it, but on the addition of antipyrine, it was quickly checked, and no bad results followed. It seems to me that it would be the most preferable hæmostatic on account of its antiseptic properties. If this should fail, pack with iodoform gauze, but, only as a dernier resort, use any preparation of iron.

Dr. Robert Murray, of New York, in a paper read before the Northwestern Medical and Surgical Society, relates three cases where hemorrhages were due to laceration of the cervix. In two cases the hemorrhage was controlled by packing with iodoform gauze. The third case resulted fatally, notwithstanding the gauze packing was used. The post mortem showed an extensive laceration of the cervix. He also calls attention to the importance of seeing that no undue pressure is made upon the anterior cervical lip. Where we find there is much pressure, we should endeavor, between pains, to push the anterior lip out of the way of the head. This procedure hastens labor and obviates trouble. In cases where hemorrhage continues, and we discover a laceration, Dr. Murray advises (the speculum being useless and painful) to seize the cervix between the thumb and fingers; traction arrests hemorrhages and enables the parts to be quickly sutured. Placenta prævia should be treated on the occurrence of the first hemorrhage. Delay is dangerous, and as far as the child is concerned, it will scarcely be carried to full term.

Having made a diagnosis of placenta prævia, disinfect the va-

gina, dilate cervix, introduce a Barnes dilator, and in its absence use iodoform gauze. In six or eight hours, use a vaginal douche of corrosive sublimate 1-5000. The cervix being now dilated, practice version by Braxton-Hicks method. When the body of the child is well engaged, it acts as a tampon. This offers the best chance for the mother, though few children are delivered alive.

I have noticed of late that the use of the curette for the removal of retained placenta, or membranes in miscarriages, is condemned; some advising to let them remain and let nature remove them, simply using antiseptic douches, ergot, etc.; others advising the use of peroxide of hydrogen. This theory may be good, but I doubt its practicability.

I always feel uneasy about an abortion until the uterus is empty and firmly contracted, and believe the profession will be slow to lay aside the treatment which, when practiced intelligently, has yielded such good results. Lately I had a chance of testing what effect peroxide of hydrogen would have upon placental tissue. In a case of abortion, I thought I had removed all of the placental tissue. On the sixth day, in spite of intra-uterine douches and quinine, my patient developed temperature of 102° f.

I used a curette and removed a small piece of placenta, and then followed with a creolin douche. The temperature fell and she made a good recovery. The piece of placenta was placed in a solution of peroxide of hydrogen, made by a reliable house, and there was very little, if any, effect upon it. When the placenta is firmly attached, I do not believe anything short of a curette will accomplish its removal. One great advantage in the use of the curette is the curing of the trouble which may be the cause of the abortion, namely, endometritis. In all cases of labor, whether premature or at full term, be careful and diligent, knowing that two lives are intrusted to you, and the happiness of a household depends upon your skill and knowledge. Throw no more upon nature than she can bear, and the gynecologist will not flourish like the traditional green bay tree.

DISEASES OF CHILDREN.

Many of the diseases of childhood originate in a neglected infancy, though some date their origin back many centuries. With the increase in population of our cities and towns, it is the infant population that suffers most. Unable to make known their wants except by a feeble protest, they are often neglected, and thus fall easy victims to disease. A majority of the diseases of children are due to bad feeding. This is not confined to children of the poorer classes, but is as common among the wealthier. As many infants die from over feeding and too much medicine as from too little food and too little medicine. A great many children are puny and illnourished, although the mother seems to furnish sufficient milk, simply because no regularity is observed in feeding. The mother lets the baby have the breast whenever it cries, without trying to discover the cause of its fretting, or she goes away and is gone too long, and on her return the breasts are overloaded, and the baby being very hungry, overloads its stomach. Many mothers pay little attention to their food or habits.

As to what food we shall give a child when the mother can not nurse it, I will speak later on. Too often a mother insists on feeding a child when she is able to nurse it. If the mother is suffering from phthisis, or some disease which would make the milk unfit for food, then we must advise her not to nurse the baby.

Cow's milk, properly diluted, or, as I prefer condensed milk, should be first tried. There are numerous artificial foods, and frequently if one does not agree another will. With the introduction of sterilized milk, a great advance has been made in the feeding of children, especially in cities, where pure, fresh sweet milk can not be obtained. Having selected the artificial food we intend to use, see that the mother understands how to prepare it; next, instruct her as to the quantity, remembering the small capacity of an infant's stomach; next, as to the frequency, and impress upon her that too frequent feeding is injurious.

Watch the stools to see that the food is properly digested. Give no medicine unless compelled to do so.

The two great troubles with bottle-fed children are: diarrhœa and constipation. The former depending often upon too much and badly prepared food. If we find this is the case, and simple remedies fail, stop all food and give barley water, then give full doses of bismuth salicylate or enemas.

It is astonishing how long a baby will live without any food. They will readily go for twenty-four hours with only sufficient barley water to allay thirst. At the end of this time we may commence with food, alternating with barley water. Peptonized milk may be used, though I have never found it necessary save in a few cases. Stomach washing, if there be very much nausea is indicated. My experience is limited to its use in three cases, in which it accomplished all that could have been expected. Where the stools are loose and with foul odor, mercury with chalk may be used—bichloride of mercury $\frac{1}{100}$ of a grain every four hours. Irrigation, with plain, warm water, an astringent like Merck's tannic acid, or some antiseptic, preferably creolin. This may be used once daily.

It is better to introduce a soft rubber catheter attached to a fountain syringe. Inject slowly, cause the patient to obtain enema by pressure, and while doing so, they will frequently fall asleep. The quantity of water must be regulated by the age. For an infant, from three to six ounces may be used. Improvement is noticed at once. It is certainly a matter of congratulation to see the profession no longer placing so much reliance upon opium in the treatment of diarrhœal troubles of infants.

With the introduction of antiseptics, the improvement in artificial feeding and irrigation of the bowels, I think there will be a notable decrease in the death rate among children. For constipation, if an enema of glycerine and water does not suffice, small doses of olive oil, or some of the pleasant preparations of cascara, in drop doses.

I do not believe dentition has a great deal to do with diarrhœal troubles in children. A child, when teething, will put

almost anything it can lay its hands on in its mouth, and frequently the mother or nurse will give it a bone to help it cut its teeth, and this is the starting point of a serious trouble. The following case will illustrate:

CASE I—A child fourteen months old was taken with an attack of diarrhœa, which the mother attributed to teething, and gave it the usual domestic remedies, but without benefit. When called to see it, I was shown one of the stools; it consisted of a bloody mucus; bowels were slightly tympanitic; no localized tenderness; tongue coated; temperature, 100° f. Decided to give an enema of warm water. Passing a soft rubber catheter well up the rectum, and attaching this to a fountain syringe, I injected 8 ounces of water with 20 drops of creolin. Gave no medicine. In a few minutes the child was sleeping. In the afternoon I was shown two small gravels which had passed with the enema, and the child was better. I then gave a bismuth mixture. The next morning there was some blood in the stool, considerable tenesmus. Repeated the enema, using 12 ounces of warm water with creolin. In the afternoon the patient passed a small hickory nut, and after this made a rapid recovery.

CASE II—Child two years of age. Mother informed me that the evening before it had been given, without her knowledge, some raw peanuts. She had given the child several doses of castor oil, and it had passed some of the peanuts. Attaching a catheter to a small hand syringe, all that I had at command, I gave the child an enema. In a few minutes it passed several of the peanuts, which it had swallowed without chewing. I called the next morning, and found the child but little improved. A constant desire to go to stool, and passing nothing but bloody mucus. Elevating the hips, I introduced a rubber catheter and injected a pint of water, forcing the child to retain it. In about an hour the enema passed, and with it four peanuts, which were very much swollen. I then gave a simple bismuth mixture, and the patient made a good recovory.

I believe, without the enemas, both children would have died.

It is a mistake to give a child a great deal of medicine, simply because we have been sent for to see one which was supposed to be sick. If we will avoid this error, it will not be said that homœopaths are the most successful in the treatment of children.

In the treatment of fever in children, our main reliance is to be placed on quinine. Where the temperature runs very high, I prefer the liquor ammonia acetat., with aconite, digitalis and

gelsemium to the coal tar products. Very seldom have I found it necessary to resort to the latter, and I am satisfied serious trouble is often done by too frequently giving these preparations in order to do something brilliant in reducing temperature. In excessive temperature the sponge bath or ice pack should be used. Let me urge you not to treat children as if the only difference between them and the adult was age. This is a *"grave"* mistake.

When we stop to consider the delicacy of their structure, the tenderness and susceptibility of their organs, and shape our treatment accordingly, I believe people will more readily send for a physician than resort to domestic remedies or send for a quack. I will bring this paper to a close by a brief description of some cases of diptheria, which it was the misfortune of Dr. Starley and myself to treat.

The cases were of the most severe and well defined type. It was noticed that, prior to and during the appearance of this disease, there were many cases of follicular tonsillitis. The first case was a child 3 years of age. The father had noticed that it was suffering with sore throat, but was not alarmed until one morning about 5 o'clock he was aroused by the breathing of the little one, and sent for Dr. Starley. The doctor at once recognized the trouble, and asked for consultation. I was called and confirmed his diagnosis. Both nostrils were filled with membrane; and several pieces were removed; the pharynx, tonsils and uvula were covered with the membrane; the vomiting was black. At 11 a. m. the child died of heart failure. In a few days another child was taken, notwithstanding prophylactic measures were used. Another physician was called. There was so little trouble in the throat he did not suspect anything serious. The following day Dr. Starley was called and found the nose and throat both involved, and in three days the child died of heart failure. Another was taken and died in a few days, making three in less than ten days. No new cases developed, until seven months later, when Starley called me to see some cases which he pronounced diphtheria. The cases were

of the most virulent type. Nose and throat both involved, and where the skin on nose or lip was broken, the membranes developed. Black vomit and purpuric spots appeared, and three cases died of heart failure, due to sepsis. One case, where the nose was not involved, recovered. No new cases developed, though many children were exposed. About three months later I saw another case with Dr. Starley, a child 5 years of age. The membrane was confined to the palate, uvula, tonsils and posteria wall of pharynx, and, after quite a hard struggle, the patient recovered. Three months later I saw another well defined case with Dr. Starley, membrane on uvula, tonsil and pharynx. Before leaving, we asked to see the youngest child, and found he was out of doors playing.

His throat showed the patches on tonsils. He was immediately put upon treatment. The membrane gradually cleared off the tonsils, but was evidently developing in the larynx, or trachea, as there was a croupy cough, and also much depression. The interference with respiration developed so rapidly, tracheotomy was done, but, before performing the operation, the family were informed that it was our opinion that the bronchial tubes were full of the membrane. On opening the trachea, there was but little relief, and the patient died in about two hours.

The other case, after a long siege, recovered. The treatment was both local and constitutional. Bichloride of mercury by spray and internally, combined with iron and hydrochloric acid, peroxide of hydrogen by spray, fresh solutions of papoid by spray, stimulants and nourishment. In every case, where the nose was involved, there was black vomit, and purpuric spots appeared about twelve hours before death. In all cases, save one, death was due to heart failure. I believe more reliance is to be placed upon constitutional treatment than anything else. In cases that recovered, the nose was kept disinfected with peroxide-hydrogen. I believe the fresh solutions of papoid, preceding a spray of soda, to be the best solvent for the membranes. It is not irritating and can thus be thoroughly applied.

I will close by quoting from a paper by Dr. Beverly Robinson, read before the Fourteenth Annual Congress of the American Laryngological Association, entitled "Some Cases of Membranous Sore Throat." In this paper Dr. Robinson clearly shows that the differentiation between the true and false diphtheria is not at all satisfactory. The reason for this statement lies in the fact that the bacteriologists tell us that usually these cases can be classified solely with a microscope, and by means of cultures or inocculations.

"The visible appearances of the false membrane and other clinical features are frequently deceptive, both as regards the diagnosis and prognosis. A membrane may be white, or dirty gray in color, perhaps adherent to the mucous membrane beneath, and leaving behind it an ulcerated surface when forcibly detached, and yet, the microscope may show only different forms of cocci, and the patient may either succumb or recover according to the intensity of the march of the disease, so far as the symptoms and sequelæ are concerned.

"In other cases like clinical evidences may be present, and the microscope and culture may reveal the true bacillus of diptheria. When the true bacillus of diptheria is discovered, and despite the fact that the march of the disease is at first apparently mild, we have a dread of what the probable outcome will be. As regards the treatment, we should not make any difference." The same local and general agents should be employed. The discussion that followed clearly showed that the profession believed there was such a disease as membranous sore throat. The public should in some way learn through the medical profession, that there are cases of membranous deposit in the throat, accompanied by general phenomena, more or less severe, we are justified in pronouncing not diptheria, which we are able to manage intelligently, and without the obligation of at once naming a dread disease, and thus, possibly, sounding a false alarm. To his last remarks I wish this association to pay close attention. He says: "I should like very much, indeed, to have a statement go forth from this associa-

tion, expressing an intelligent appreciation of the difficulties involved with reference to diptheria, and what should be our conduct in cases of a doubtful diagnosis."

I would like very much to know what has been the death rate from diptheria in our Texas cities and towns. Is it not often the case, when we are called to see a patient suffering with a sore throat, we are in doubt whether it is, or is not, diptheria? Is it not better, after taking all precautions, to protect the other members of the family; to say, candidly, we are in doubt, and that a few days may be necessary before we can determine the true nature of the trouble? If, in the next few days, we are positive it is not diptheria, and the patient is recovering, it is our duty to say it was a case of sore throat, rather than to sail away with unbecoming and unworthy honors, and thus to reflect on some brother practitioner who has had the misfortune to treat true diptheria, and lose some of his cases.

DISCUSSION ON DR. POPE'S PAPER.

DR. CHRISTIAN said, in reference to diphtheria in children, that any fool could tell a well marked case, but a wise man can not always tell a doubtful case. It was impossible for a country physician to carry around his microscope, and without the microscope a correct diagnosis would often be impossible.

DR. SEARS said the membrane was thinner in membranous sore throat than in diphtheria; that in the former the membrane could be wiped off without producing hemorrhage, while in diphtheria the surface bled after removal of the membrane. He also said there was much less depression in the former than in the latter. His treatment was to swab the throat with a solution of benzoate of soda or salycilate of soda, and to give quinine internally to combat the fever.

DR. KEILLER said, in reference to tying the cord, that inasmuch as tetanus was frequent in the south, he thought the cord should be dressed antiseptically. He also referred to symphysiotomy as an operation which was attracting considerable attention at present. Also to the induction of premature labor by the introduction of three to five ounces of glycerine between the membranes and uterine wall.

DR. BRITTAIN said he had treated a large number of cases of labor without the use of bichloride in dressing the cord. He used only

plain soap and water, and had never seen a case of tetanus. In a Pennsylvania hospital they had quit tying the cord altogether, but he still thought it ought to be done as a matter of routine.

DR. CHRISTIAN said he had never treated the cord antiseptically but once, and he had been sent for two weeks afterward to know what he had done with it. He found the stump as green and fresh as the day he tied it, and that cured him of using antiseptics in dressing the cord.

PLACENTA PRÆVIA. HOW TO TREAT IT.

Q. C. SMITH, M. D.,

AUSTIN.

The great obstetrician of the "land of cakes" taught that "meddlesome midwifery is bad," and the immortal Coan sage truly said, vis medicatrix nature is the greatest healer. Yet, what surgeon would wait for nature to cure a hydrocele, or physician withhold drugs in malarial fever? The great surgeon-accoucheur of New York wisely says: "To *trifle* with such cases is the best way to maintain the present mournful statistics."—*Lusk.*

The treatment of placenta prævia should, as a matter of course, be adapted to meet the many varied conditions and indications liable to obtain in any given case, and cases vary greatly, even in the same month of pregnancy. But, as it is rare for death to occur from hemorrhage, in placenta prævia, before the seventh month, I will consider, only, and briefly, the treatment best suited to cases that have progressed at least to the seventh month of pregnancy. However, the treatment I advise is more or less applicable to the relief of many cases occurring earlier than the seventh month. My plan of treatment of placenta prævia is based upon the idea that the safety and welfare of the mother is, by far, of the first importance, that of the fœtus being secondary, though not ignored, as its interests are thus better conserved than when the usual text-book hesitating tentative waiting treatment is carried out. A more or less sudden hemorrhage, is the immediate reason of the physician being called, in the majority of cases. And it often occurs that this primary hemorrhage has ceased partially, or entirely, before the doctor arrives. But if the hemorrhage is still considerable—the cervix is apt to be softened and relaxed—then quickly pass the finger through the placenta and evacuate the waters, keep-

ing firm, steady, continued pressure and compression over the fundus uteri, until other hemostatic measures can be brought to bear.

But may be the cervix is so small and rigid, that the finger can not pass through it; if so, douche the cervix with hot water, until the hemorrhage is partially or entirely stanched. Then place the patient in Sims' position, introduce a speculum—I prefer Dawson-Sims', the self-retaining modification here shown—pass a tube or long syringe nozzle through the cervix, and slowly inject hot styptic water (e. g., hot solution of alum) until all hemorrhage ceases. Remove the speculum, pass a catheter and empty the bladder, and administer a hypodermic injection of three to five grains bimuriate quinine and urea, and give hot whisky toddies until patient is well under the narcotic and anæsthetic influence of the whisky. If the cervix is still rigid, give a drachm fluid extract of ipecac, large doses of ipecac being powerfully hemostatic, equalizing and quieting nervous force, and less emetic than small doses.

Now, proceed without delay to introduce the speculum, and carefully dilate the cervix, using such dilators as are necessary, injecting the hot styptic water q. s. from time to time to stanch hemorrhage. With a Simpson's sound, curved to suit the case, carefully separate the placenta from the lower zone of the uterine wall, to three or four inches from the cervix: using hot styptic injections freely from time to time and until all bleeding ceases. Then introduce a large Barnes rubber dilator into the cervix, and slowly fill it with plain warm water, until the cervix is tautly distended, slowly increasing the size of the bag as the cervix relaxes. Should the vagina not be soft, distensible and capacious (remove the speculum), introduce a larger Barnes rubber dilator up to the cervix, and slowly fill it with plain warm water. By the time these measures have been carried out, or soon thereafter, uterine contractions usually come on; and if they be quite strong, frequent and regular, for as long as a half hour—having plenty of hot styptic water ready—remove both rubber bags, while they are distended, if possible, making traction

during labor pains: keeping up well applied, steady manual pressure and compression over the fundus uteri.

Soon as the bags are removed pass finger through the placenta and evacuate the waters and ascertain the presentation.

With proper care and manual assistance, labor will now—in the majority of cases—progress to a successful termination without further instrumental interference. But, if necessary, deliver by the feet, or with forceps, external manual pressure and compression closely following the fœtus as it moves down and out. This manual pressure and compression will often cause the placenta to pass partly, or entirely, out of the uterus, and sometimes out of the vagina; if not, it should be promptly removed. Then, if steady, continued external manual compression does not cause the uterus to contract and restrain hemorrhage, douche the uterine cavity with hot alum water, hot dilute vinegar, hot chloroform water, or hot dilute phenol sodique; but never with ferruginous solutions.

The after-treatment should be much the same as that which should be carried out in cases of carefully managed normal labor. An antiseptic healing ointment—somewhat like the formula given below—gently spread over the external and internal surfaces of the labia, and parts near around, and thickly spread upon a pledget of absorbent cotton, large enough to well cover the pudendum, to be kept closely applied, and renewed, on a fresh pledget of cotton, every three to six hours, for the first few days; then three or four times a day until lochia ceases, the external parts being carefully cleansed with very warm Packer tar soap-suds, just before each time the ointment is reapplied. This elegant puerperal ointment is made thus:

℞ Oleum Pini Pumilionis.....2 drachms
Oil Camphor ....2 drachms
Oil Sassafras.....2 drachms
Oil Cinamon.....1 drachm
Lavoline .....2 ounces
Pure Sugar, in very fine powder.....4 ounces
Lanolin .....3 ounces
M. Ft. Ung.
S. Apply as directed.

For this purpose, the old-time midwives used a salve made of lard, turpentine and sugar, which served a valuable purpose, as I have often observed. But no vaginal or uterine injections should be used, unless pronounced fever or peritonitis supervenes. The bowels should move at least once every day, salines (phosphate sodium) being preferable, if drugs are required.

Though enemas may often well supersede laxatives per orem, glycerine and ox or hog-gall, each half to one tablespoonful, with tablespoonful warm water, as an enema, once a day, is quite efficient. Patient should take two to four grains quinine twice a day, just after meals, for several days following labor, and a generous diet of such food as she desires. By the management of a case of placenta prævia upon the plan I have briefly outlined, we remove this much dreaded circumstance, (the mere thoughts of which, as portrayed by many teachers and text books, made many of us tremble in earlier years) from the realm of anxious hopes, dreads and fears, and place it where it belongs—in the list of legitimate and successful surgical operations.

The surgeon-accoucheur feeling confident of being complete master of the perilous situation, can strongly assure the apprehensive sufferer and her anxious friends of certain early relief and safety, and thus bring joy and solace to distressed families, and preserve many precious lives that otherwise would go to swell the already too large "mournful statistics" the misguided trifling of the hesitating deplorable past has labored to maintain.

DISCUSSION ON DR. SMITH'S PAPER.

PROF. J. F. Y. PAINE said that in discussing the paper he labored under the disadvantage of not having heard the whole article. The writer stated that the finger should be passed through the placental tissue to accomplish the rupture of fœtal membranes and evacuate the amniotic fluid. This procedure can not be justified except under the most unusual circumstances. The danger associated with placenta prævia depends upon the hemorrhage, which takes place before

proper procedures are employed rather than upon the carrying out of methods of treatment. It can be safely said that a fatal issue of this condition is a rare occurrence when the diagnosis has been promptly made out and the case skilfully managed from the beginning. The most material question at issue among writers, at the present time, is whether gestation should be allowed to continue after the first hemorrhage has taken place and the diagnosis of placenta prævia determined. The continuance of pregnancy in the face of such a serious abnormality is a menace to the safety of the woman, and should not be permitted. No foresight can determine when the second hemorrhage may occur. Whilst it is true that the first hemorrhage is not generally serious, it has been known to prove fatal. All admit that each recurring hemorrhage is more serious than the preceding one. The chief argument in support of the expectant plan of treatment is in the interest of the child. No mode of procedure can be justified that would balance the uncertain result as regards the child against the life of the mother. The consensus of opinion is decidedly in favor of precipitating labor as soon as this condition has been determined, and there is now little difference of opinion as to the best modes of action. The methods must be modified according to the degree of dilatation or dilatability of the os, the extent of the hemorrhage and the condition of the patient. When the os is but slightly dilated and the hemorrhage profuse, the vaginal tampon must be employed. Its removal at the expiration of four hours will, as a rule, reveal some expansion of the os. Barnes' method has been found safe and effective at such a juncture. It consists in introducing the index finger through the os, and sweeping it around the lower cervical zone which separates the placental attachment to that extent. This act should be speedily performed, because the placental separation greatly increases the loss, but the subsequent effect is most satisfactory. It liberates the cervical tissues and permits the retraction of the longitudinal muscular fibres which obstructs the torn vessels and admits of freer dilatation of the os. The Barnes bag can now be introduced, which will perform the double office of tampon and dilator. When the dilatation is sufficient, two fingers passed toward one side will reach the border of the placenta, and beyond it, encounter the amniotic sac, which should be ruptured and podalic version, by Hicks' method, performed when practicable. Failing this, the entire hand should be advanced into the uterine cavity, a foot seized and brought into the vagina. The effort to reach the placental border should be made on the left side, as a larger part of the placental mass is usually attached upon the right side. This maneuver, when skilfully executed, is comparatively safe. The hand that separates the placental attachment acts, at the

same time, as a tampon; so does the arm, in turn, and when the foot has been brought down, the leg takes the place of the arm and hand in compressing the ruptured vessels and preventing hemorrhage. When the os is insufficiently dilated to admit the introduction of the finger and the hemorrhage not too great to forbid the waste of time required for its employment, a sponge tent should be inserted into the os, which has the advantage of a vaginal tampon in that it promotes dilatation, whilst at the same time it acts as an efficient plug. As a rule, the cervical tissues are flaccid, as a consequence of their hyperæmic condition, and the cases are infrequent where a small size Barnes bag cannot be employed at the outset. The circumstance which most commonly contraindicates its employment is the terrific hemorrhage and the time required for its introduction. The vaginal tampon, in such instances, is to be preferred. The vaginal tampon performs the invaluable office of checking hemorrhage at once, and should be employed in all cases where the hemorrhage is so great as to imperil the life of the woman.

To summarize, the following propositions may be stated:

1. At whatever period of pregnancy placenta prævia is diagnosticated gestation should be terminated.

2. For the relief of hemorrhage we may state the following points: (*a*) When the os is but slightly dilated and resisting, and the hemorrhage excessive, tampon the vagina. (*b*) When the os is sufficiently dilated, or relaxed, to a degree that will permit the introduction of the finger, and the hemorrhage not alarming, detach the placenta from the cervical zone and complete the dilatation with the Barnes bag; the subsequent steps to be carried out as stated in another connection.

3. When the child's thigh has been brought into the vagina, and the condition does not demand speedy delivery, the labor may be allowed to proceed without further assistance.

4. The use of ergot is not required in a considerable proportion of cases.

The views given here apply, of course, to placenta prævia centralis. The plan to be employed in the lateral variety of placental implantation is so simple and familiar to medical practitioners that it would be a waste of time to discuss it specially. Instances in which the woman is already exhausted, by excessive waste, are not infrequent, and no effort at delivery should be made until she has reacted, all effort being limited for the time to the prevention of hemorrhage and the restoration of strength.

When hemorrhage occurs after the completion of delivery, recourse should be had to the intrauterine employment of hot water and styp-

tics—preferably the per-salts of iron—ergot and other means to promote uterine retractility and contractility. Transfusion will find its application in cases where hemorrhage has been so great as to paralyze vital action and prevent recuperation.

Every manipulation should be conducted under the most scrupulous aseptic and antiseptic precautions. The utmost cleanliness should be enforced, and disinfectant vaginal douches persisted in during the childbed period.

DR. Q. C. SMITH, author of the paper, denied that traction on hand or leg will stop hemorrhage. The patient would die while trusting to such means. He tried tamponing vagina in his early professional life, but never found it to work. As for sponge tents he emphatically warned his hearers not to fool with them. Sims taught their use, but quit it long before he died.

SOME OBSERVATIONS ON ECLAMPSIA.

SAMUEL CUNNINGHAM, M. D.,

ELGIN.

It would seem like an unwarranted presumption, nor shall I attempt before this intelligent body to advance anything especially new upon this subject, which has been so elaborately discussed by the many masters of the obstetric art. It is rather for the purpose of eliciting your discussions, thus availing myself of your views and experiences, that I have ventured to introduce the subject to your notice.

Without further apology I shall assume that there is no branch of obstetrics in which a thorough knowledge of what to do is more essential—for most certainly it is a condition accompanied by the gravest symptoms, and constitutes one of the most serious diseases with which the physician has to cope. How often, indeed, it seems the case when attending the parturient woman the physician is horrified to witness the tonic convulsive, epileptic like seizures, that so suddenly take hold of his patient, in the midst of which excitement many physicians almost lose their wits, realizing then that at most times assistance can not be procured and the attendant is compelled to rely upon his own knowledge and resources.

This fact so well recognized as true I shall again insist should be sufficiently important to stimulate the doctor to get as thorough an acquaintance with this subject as possible, together with all the means now adopted in the practice of midwifery and in obstetrical surgery.

In the majority of cases of eclampsia there are premonitory symptoms which announce to the wideawake attendant the threatening convulsion. Prominent among these symptoms is a quietude, or sometimes a short nap that seems very peaceful, a condi-

tion or state in which the woman ceases to complain. This condition is described by Dr. Lusk as a "deceitful truce." Then the eyes open suddenly and become fixed. The pupils dilate and the appearance of the face is of a smiling aspect. She then complains of headache, dizziness and then blindness. These symptoms my experience, though limited, have verified as being precedents of the first convulsion.

Upon reviewing the history of eclampsia and the views of prominent observers from earliest obstetrical records, it will be seen that it has never been proven that puerperal convulsions are due to one and the same cause; therefore the treatment of one case might not apply to another; hence the necessity of scrupulously considering the exigencies of each particular case, and the adoption of such measures as may be intelligently employed in the treatment of each case and its peculiarities.

Since abuminuria has been so largely discussed and has proven such an important factor in accounting for eclampsia, and since the œdema and anasarca in the majority of cases stand out as bold intimations of this condition, the duty of the accoucheur, in order to defend against this formidable disease the pregnant women committed to his charge, is the exercise of diligence and carefully watching her, by frequent examinations of the urine. The presence of albumen to any great extent demanding the strictest prophylactic measures, and every precaution taken to lessen the abnormality by the employment of such treatment as will induce the skin and bowel to aid the kidneys, the woman being supported by tonics, and strict dietetic measures enjoined upon her.

The frequency of eclampsia is estimated by Dr. Lusk to be about one to every five hundred pregnancies. My own experience, however, is to have seen this disease oftener than is indicated by this report, in my own practice I have up to the present time officiated as accoucheur in 1072 cases of labor at full term, and have met with six cases of eclampsia. Besides this I have seen two other cases in consultation, which makes an experience of eight cases that have come under my immediate observation.

With these imperfect preliminary remarks, I shall proceed to describe the eight cases to which illusion has been made.

They were all primiparas. The presentations were all vertex. The sex of the child, in every instance, was a male. Six were of the antepartum and two were of the postpartum variety.

Of these eight cases, it affords me no small degree of pleasure to report seven recoveries, several of whom yet survive, and within the bounds of my territory continue to propagate their species, and I am honored with a call to officiate at the parturient hour every eighteen months or so.

The first case, and the one, too, who died, to which I will introduce you, was Mrs. J. L.; age 20. She began labor on the 13th day of November, 1884. My first visit to her was on the 15th, two days later than date of labor inauguration. The messenger who came for me apprised me of the convulsions, and of the attendant's desire that I should come prepared for the most extreme emergency. The distance to be made was eight miles and over a rough road. Upon my arrival found her in most violent convulsions, which had not abated since they began three hours prior to my arrival. The attendant, Dr. Bragg, who lives in that community, estimated the attacks to have been about forty prior to delivery, which we effected by the use of forceps, after having produced anesthæsia with chloroform. In this instance there was complete uterine inertia, the os only partially dilated, though not exceedingly rigid, the head of the child was above the superior strait, these hindrances complicating the condition seriously, and making the application of forceps exceedingly difficult, also necessitating greater traction than would have otherwise been required under circumstances more favorable. The child evidently had been dead some time, as it was almost black, and the cuticle became denuded from its shoulders and hips on delivery. The woman lived three days after delivery, and continued to have an occasional convulsion up to the time of her death, although chloral, bromide potash, and digitalis were given in full doses. A hot antiseptic douche was employed, thoroughly irrigating the

uterine cavity, but she died, with marked symptoms of septicæmia and meningitis.

CASE II—Mrs. S. H. M.; age, 28; quite a stout, fleshy and beautiful woman. Labor began on 5th day of August, 1887, and after a tedious and exhausting struggle of twenty-four hours she gave birth to a well developed boy of 9 pounds on August 6th at 3 p. m. Immediately on birth of the child, before delivery of placenta, she was seized in a hard convulsion. In the midst of the great excitement chloroform was administered, and as the convulsion was abating, a good dose of morphine and atrophia was injected subcutaneously. The placenta was carefully and easily expressed, requiring only slight traction on the cord, with gently kneading the womb, and nature dealt kindly with her in not allotting to her fate a severe hemorrhage. Watching her closely for the next twenty-four hours, I, for the first time in my experience, employed the much *lauded* veratrium, giving it only when the pulse rate was accelerated in 10-drop doses, hypodermically, at intervals suggested by the conditions present. And, in honor to those whose experiences are so favorable as to have eulogized this drug, I must confess myself indebted for the happy influence it undoubtedly wielded upon this patient. She had no return of the convulsions, and made as quick a recovery as any other case of confinement that I have ever attended.

CASE III—Mrs. B. P.; age, 16; rather stout. Began labor, with first pain on 26th day of March, 1888, convulsions of a most violent type were ushered in. Living only a few blocks from her, and not having gone to bed, was soon in attendance. When I got to her the convulsion had about subsided, but she could not be aroused. A second convulsion was soon on her while I was preparing my hypodermic syringe for use. I at once injected the dose and gave chloroform.

Digital examination revealed an undilated, rigid os and vagina. The nervous system, and also the circulatory, was maintained in a state of quietude, as symptoms indicated by the administration, hypodermically, of a dose comprising, mor-

phine, $\frac{1}{8}$ grain; ergot, 20 drops, and veratrium, 10 drops. Ascertaining that bowel was constipated, a large dose of castor oil, turpentine and calomel were given, which had good effect. She soon regained consciousness, and with only the above described treatment, her labor assumed a normal course, and at about 11 o'clock, p. m., of March 29, she gave birth to a child of good development, which lived and did well. Her labor lasted three days. With the use of tonics and other conservative measures, she escaped fever, did well in every respect and made a good recovery.

CASE IV—On September 15, 1890, was called to see Mrs. R. L. B., whose age was 20. Digital examination revealed rigid, undilated os and vagina, and all conditions indicating a tedious time. I gave her a hypodermic of morphine and left her, instructing her husband to send for me when the pains began to increase. Was called back to her that night, having to get up from bed and go a distance of three miles. Digital examination revealed but little change. Another dose of morphine was given, as before, which afforded her some ease from the spurious pains, and she got some sleep. After this, the pains began, and in character were changed. The os was dilating nicely and her appearance was such that I felt hopeful of labor terminating in a few hours when I could take my leave, but, to my sorrow, after having gone into a peaceful and quiet slumber, she suddenly aroused and exclaimed, "What's the matter with me? I can't see! I'm blind! Light the lamp; I'm going to die!" Recognizing this and other symptoms as being characteristic of an impending convulsion, I proceeded to give chloroform as quickly as possible, carefully adjusted forceps, and was successful in effecting delivery in a short time.

Just after expressing the placenta, however, and when I began to indulge in the pride of having protected my patient from the ordeal I had so much dreaded, she was seized with a horrible convulsion. Chloroform was immediately resumed, and as the attack was subsiding a hypodermic of morphine and atropia was given. A few doses of morphine, ergot and veratrium

were given at intervals as indicated to keep her quiet and the pulse low. Oil and turpentine were given as is my usual custom, she had but the one convulsion mentioned, and without having any fever, went on to a rapid and good recovery. The child, a well developed boy of eight pounds, did well.

CASE V—Mrs. C. T. O.; age, 34. This lady was rather on the old maid list when she was married. She had spent many years of her life in teaching school, and having made this statement, I will leave to your liberality of thought the conclusions as to what temperament she might be, and especially upon this occasion.

I was called to see her at 9 o'clock p. m., on the 15th day of November, 1889, the very day that found her a married woman of nine months. Upon digital examination I found her progressing nicely in the first stage of labor, the conditions then appearing favorable for an early and safe termination. I at once, after noticing some anxiety, apprised her husband, an Irishman, of my understanding of her condition, which explanation was met with the reply: "Doctor, you are surely mistaken. It is not time for my wife to be sick, as we have only been married nine months today." I explained to him how it was sometimes the case that a woman gives birth earlier than nine months, but to avail nothing, as he as well as she was inexorable in the belief that I should institute some treatment that would arrest the labor, at least for a few days.

The unpleasantness of the situation forced me to as politely as I was capable to tender my resignation, insisting that they call in some one else who might possibly serve them better than I was capable of doing. But they were complimentary enough to express their preference for me to remain, "*if it did have to come.*"

Back to the case, and apologizing for this digression. A few more hours and she was in the hardest and protracting pains. To be brief, grave symptoms at this time began to present themselves. She was failing physically—exhaustion was threatening. I told her husband of what I feared would be the result

of further delaying the use of the forceps; but his prejudice for the procedure was so great that I was denied the exercise of my conservatism until she was in convulsions, when I gave chloroform and proceeded to delivery with the forceps. The child, a fine boy, is still living and growing well.

She had no return of convulsions after delivery. Sustained no laceration; had no fever, and with no other treatment than a dose of morphine and atropia, subcutaneously injected, a dose of oil and turpentine and a few doses of quinine, made a rapid recovery.

Of the remaining three cases I have some notes, but upon examining them in preparing this paper, find such a general similarity of features will not burden your patience in detailing singly these cases, but will only speak of them in a general way. In each instance the convulsions were before delivery. No return of convulsions in any of them after delivery. Chloroform anasthæsia, carefully adjusting the forceps slowly bringing the head well down on the perinæum, when the forceps were removed; then the labor conducted with my hand; towels wrung out of hot water applied to the perinæum till expulsion of the head—was about the practice that was instituted for the relief of these trying ordeals—all of which terminated safely to mothers and babies. In these eight cases, excepting the first mentioned, I procured specimens of urine, which I carefully tested, my observations being to find albumen to considerable amount in them all, which observation leads me to better appreciate the researches of those who have in statistics frequently shown the association of eclampsia with albuminuria.

When convulsions complicate labor, in view of the fact that there is abundant reason for supposing the presence of renal insufficiency, an endeavor to restore the kidneys to their normal functions as well as the introduction of such agents or means best indicated to lower arterial tension and to diminish as much as possible the great excitement of the vaso-motor centers, are among the leading indications of treatment. Venesection has many advocates in bringing about a better state of affairs at this

particular moment, and while I have no experience in bleeding, I must confess a profound regard for those who have thus based their opinions, especially in some cases of the epileptic variety. Since convulsions have a tendency to continue as long as labor lasts, and since the frequency of attacks proportionately enhances the chances against recovery, every obstetrical procedure consistent with the safety of the woman is, in my humble opinion, speedily demanded at the hands of the attendant to hasten delivery.

As a rule I believe a good dose of morphine and atropia indispensable after delivery with the forceps, and then the nervous system kept quiet as long a time afterwards as each particular case may seem to require, with chloral and bromide of potash. Quinine should be given in moderation in anticipation of fever, and Norwood's tinct. veratrium viride should be cautiously employed when pulse rate is high.

PUERPERAL ECLAMPSIA.

C. F. PAINE, M. D.,

COMANCHE.

Cases of puerperal eclampsia treated successfully with opiates after other remedies had failed, including venesection, chloral, bromide of potassium, chloroform, hyosciamus, etc.:

CASE I—When called to see Mrs. G., aged 22 years, in March, 1873, primipara, general health fair, though not plethoric, she had been bled to the extent of sixteen ounces for rigidity of the cervix-uteri by the attending physician—who, by the way, was educated in the days of venesection—prior to my arrival. Labor progressed naturally and terminated in a short time, succeeded very suddenly by severe convulsions, which continued to recur as often as every fifteen to twenty minutes for eighteen hours, despite the internal use of chloral, bromide of potassium, hyosciamus, chloroform and small doses of opium. The chloroform was given by inhalation to forestall the convulsions. At length full doses of opium and quinine having been agreed upon, we administered gtt. 30 tinct. opii, with gr. 10 of quinine, which was followed by complete and permanent cessation of the convulsions and recovery of the patient—only to die a few weeks later of rubeola, peritonitis, etc. Whether the arrest of the spasms was post hoc or propter hoc I am unable to say; but think it only fair to give opium the credit.

CASE II—Was called at 1 o'clock a. m., 30th ultimo, 1882, to see Mrs. H., age 20 years, primipara, who, I was informed by the midwife in attendance, had been in labor some six or eight hours. Patient complained of slight headache—otherwise doing well. Os-uteri dilated; vertex presentation; labor progressing favorably. After administering a draught of chloral, bromide potassium and extract hyosciamus for relief of headache, I retired to an adjoining room to sleep and await further progress. At the end of about an hour I was aroused by the husband, who informed me that the lady was in spasms. On reaching the chamber I realized the fact, for she was in the throes of a most violent convulsion. As she was plethoric, and remembering the headache she had complained of, I at once corded up the arm, and

drew sixteen ounces of blood, at the same time commencing the use of chloroform by inhalation, carrying it to the extent of complete insensibility. In less than an hour labor was completed, chloroform having been continued the whole time. As soon as the labor terminated the chloroform was withdrawn, and immediately another convulsion ensued, more violent, if possible, than the former ones. Another vein having been opened and eight or ten ounces of blood taken, the use of chloroform was resumed, the convulsions continuing to recur as often as the chloroform was withdrawn. Finding it impossible to administer medicines longer by the mouth on account of coma, I gave morphia sulphate gr. ¼, hypodermically, with the effect of completely and permanently arresting the eclampsia. The patient awoke after a two hours refreshing sleep, perfectly rational and very much surprised and incredulous when told she had a fine boy.

In presenting these two cases, gentlemen, I do not wish to be understood as laying any claims for opium, as a specific, or appearing before you as a champion for opium in the treatment of this fearful malady. My chief object is to endeavor to show the utter fallacy in relying on any one drug, or combination of drugs, in the treatment of a disease, the causes of which are so various and multiform.

Meadows, in his Manual of Midwifery, says: "It is remarkable how uniformly, and, in cases the most diverse, the practice of blood-letting was recommended. Then we were, and, indeed, by some we are still told that the first thing to be done in puerperal convulsions is to bleed freely, so as to produce a decided effect on the pulse, and, if possible, also on the *fit itself*. Ten, twenty, thirty, and even fifty ounces of blood was recommended to be drawn.

Condemning the routine practice in the treatment of puerperal convulsions, as in everything else, let us discriminate and treat our cases intelligently and in accordance with the individual indications of each and every case. Let venesection and purgatives have their place, as in the apoplectic form of disease; bromide of potash, chloral, chloroform, opium, etc., in the epileptic. While the hysterical form should come in for its appropriate treatment by antispasmodics, by assafœtida, valerian and attention to general health.

When at full term, the labor should be terminated as soon as practicable, with due regard, of course, to the safety of mother and child. When the convulsions appear to be due to, as they most frequently are, some state or condition of the nervous excitability, or reflex action, opium, in my opinion, is the *sine qui non*, and I give the preference to the hypodermic method.

INFLUENCE OF DEVELOPMENT IN DISEASE.

H. P. COOKE, M. D.,

GALVESTON.

At all times in the history of the human race it must have been observed that the greatest danger to life from disease was not in the final stage of old age with its impaired functions, crippled tissues and diminished resistance, nor in the prime of adult life, with its dangers, accidents and exposures, but in the first decade, the time of growth and development, the period of infancy and childhood, when it would seem as if there were afforded the greatest protection and the fullest immunity from harmful influences and disasters.

As civilization advanced, closer attention was paid to the influences most destructive to the race, and the cause and time of their most active manifestations, and efforts were made to preserve and prolong the existence of the individual. The diseases most common in early life, their relative potency for evil and the cause of undue malignancy were ascertained, the affections peculiar to this period—whether congenital or acquired—were assigned their due value, and the absence of those prominent at some subsequent time was noted. Abundant information has been obtained as to all matters of feeding, clothing, exercise and the numerous details included in the hygiene of infancy; and this has so sensibly diminished disease and death as to impress both profession and laity with the necessity of abandoning some of the more glaring errors for correct practice. One of the first facts recognized in this connection was that in dealing with infants and children we are not treating "miniature men and women," and that we can not interpret different causes and termination of diseases and the different effects of drugs by assuming them due to mere reduction in size and

weight. We have to do with human beings, to be sure, but beings in whom most functions are carried on to some extent as they are performed in the adult, with modifications due to the process of growth and development being associated with loss and repair.

Only in comparatively recent times, however, has there been inquiry into the essential nature of the diseases of the young, and these investigations have, perhaps, not yielded such an insight as might have been desired, and of the accumulated facts, possibly but few even now have a direct practical value; but a recognition of the truth is better than doubt, and there are differences in the anatomy and physiology of the young, which influence the cause and termination of all diseases, render the appearance of some possible at this age alone, and control, in considerable extent, the measures adopted for their removal.

Peculiarities in the chemistry, histology and structural arrangement of bone; the chemistry and morphology of the blood; the minute and gross anatomy of the nervous, circulatory, respiratory, muscular, genito-urinary and digestive systems have all been carefully studied, and just as the greater fatality is from disease of the respiratory and digestive organs, so it is in these organs, and necessarily in the nervous and circulatory systems, that the most useful knowledge has been gained.

The blood of the new-born infant is less in relative amount, of less specific gravity, and contains less fibrin, a smaller proportion of the albumens, fewer red corpuscles and a much larger ratio of the white cells, while it is not so readily coagulated, and is more easily diffused. Many of these conditions are rapidly changed, yet some persist until late in childhood.

The heart of the infant is relatively large to the whole body, relatively extremely small to the size of the aorta and pulmonary artery. Between these two latter, there exists a ratio the reverse of that found in the adult, and hence there is greater blood pressure in the lung of the infant. The right side of the heart is, at first, relatively strong, but rapidly assumes its normal ratio. The arteries contain much less elastic tissue, are

more easily injured, and are subjected to less pressure. They are widest in the lung, kidney and lower extremity. The action of the heart is rapid and easily interfered with, both its rythm and frequency being subject to variation from slight causes. This is due to the unstable condition of the nerve centres, and especially those having an inhibitory and governing function, both as to the action of the heart and of the vaso-motor apparatus, which latter is especially prone to disarrangement in infancy. In the nervous system are found many interesting conditions, as the changes here must keep pace with the gradual development of every other tissue. It is convenient to assume that the brain is composed of three superimposed centers—the lowest, or reflex centre—a higher having both reflex and conducting functions, and, last of all, the fore-brain, in which, among others, the inhibitory power exists. These centres are completed and brought into action in the order named, and the full development of the higher brain masses and the exercise of their office is in exact accordance with the unfolding of the mind. The inhibitory control is noticeably absent in the infant, and all during the period of childhood is easily lessened or temporarily abrogated; and it is important to note the simplicity and readiness of all the reflexes consequent upon the absence of this governing power of a part of the brain of higher grade and more complex mechanisms. Of the differences existing in the cord, it may be observed that they consist of a general immaturity of intimate structure, except in the motor cells of the anterior columns which are prominently advanced and disproportionately large. The blood vessels of the entire central nervous system are capacious, and their calibre changes upon slight instigation.

The nerve trunks of the body at large are well formed from birth, and their excitability is readily manifested; and this, coupled with the prompt and simple action of the reflex centres, causes a disturbance of equilibrium and an instability of action to be induced by stimuli, or irritants, which, later in life, would give rise to no appreciable interference. This is more particu-

larly the case in the manifestation of the control of the circulatory and muscular systems, though an equal but not so readily detected influence may also be exercised over the secretory and general nutritive or metabolic processes. Of these latter, it is well to bear in mind the heat-regulating apparatus, and more prominently that devoted to the actual production of heat, as it is here we must seek the explanation of the sudden and extreme variations of temperature so common in infancy.

There are many changes in the tissues concerned in respiration between the collapsed and functionless state pertaining to the moment before birth and the developed conditions found in the adult. The chest of the child is broader, shallower and less in anteroposterior diameter, chiefly from the straightness of the spinal column and the consequent small forward concavity. The ribs leave the spine at a less acute angle, are more horizontal in direction, have a flexible and soft cartilaginous portion, and are less rigidly bound together.

The muscles concerned in respiration are but imperfectly developed, and this is especially true of the intercostals and accessory muscles, while it is not so manifest in the diaphragm, which bears the brunt of the inspiratory movements in the child, while the expiratory are largely due to the elasticity of the structures of the respiratory apparatus. The air passages leading to the lung, the nasal, pharyngeal and laryngeal are comparatively small. They are lined by membrane of an incomplete firmness of structure and of loose union with the underlying framework. The bronchial tubes are large in calibre, have thick walls, are lined by mucous membrane, arranged in folds and but insecurely attached to the muscular ring. They undergo the usual subdivision, and the smaller and more minute radicals furnish a share of the actual breathing area of the organ. The alveoli are small, not so numerous, have thick walls, and are separated by an almost embryonic connective tissue, which is the framework also for the support of the blood-vessels and lymphatics—both of which are lavishly distributed,

and, in the case of the former, capable of wide variation in calibre. The muscles of the bronchial tube, both in size and strength, are of minor importance, while the glands are neither so active nor so constant in their products as in the grown-up. The respiratory movements are quicker than at a later period from the comparatively insufficient air space—and are subject to much suddenness of change, brought about as well by the reflex interference in health as by the various causes arising in disease. Though volition has less to do with this disturbance, it is readily caused by stimuli applied elsewhere, and which, in the adult, are ordinarily without effect, or momentary inaction.

Perhaps the subject of digestion in children has received more attention than all other functions; and, in the organs devoted to its performance, we find many interesting evidences of a transition stage during the first four years of life. The glandular structures of the digestive tube, as a whole, are in an immature condition for a varying period after birth; the salivary and pancreatic glands are ungrown, and their secretion is in small quantity and deficient in starch-digesting ferment until about the second month of life. The pancreatic juice also possesses but feeble albumen-digesting power, and, it is claimed, has but little effect upon fat, while its sugar-transforming ability is demonstrated at an early date. The gastric glands produce a digestive secretion equivalent to that of the adult stomach, except as to relative quantity, and perhaps a difference in its acid constituent, the significance of which is undetermined. The intestinal glands are deficient in digestive power, while the mucus-forming function is fairly conducted.

In structure, the entire tube is deficient in muscular formation, and this is especially well marked in the stomach, which organ is almost a simple dilatation of the general digestive lumen, devoid of the anatomical arrangement in the adult, and inefficient in contractile power, particularly at the cardiac and pyloric orifices, at the former of which there is an absence of the so-called valvular arrangement of the circular muscles.

The intestine is of small calibre, longer in proportion to the length of the body, and, in consequence of this, presents a noticeable angularity of convolutions. The rectum is straight, and but slightly supported by attachment to adjacent structures.

The blood supply of the whole digestive apparatus is abundant, and the vessels are easily increased in calibre; are loosely framed, and of delicate mural structure. The lymphatics vessels are free and abundant, and are, as elsewhere, patent and accessible. The glands are in a formative stage, and their aggregation into Peyers' patches, apparently of unfinished type, until well on toward puberty. The liver is enormously large at birth, and but slowly assumes its future proportionate size. Its full development is not due to its importance as a bile-producing organ; but is in accord with the excessive activity of the metabolism of this period of life. The bile is in full quantity, but does not immediately become rich in any active constituent, its deficiency in bile-acids and salts perhaps accounting for its failure to maintain the importance as a digestive agent in infancy, so generally ascribed to it.

The teeth already forming in the jaws at birth are successfully erupted in the period extending from the sixth month to the end of the second year. Their office of comminuting the food is poorly manifested during fully two-thirds of this time, and in this keeps pace with the gradual evolution of the digestive apparatus as a whole.

The changes so far enumerated are an index to those occurring in other organs and tissues; but for the purpose of illustration, these are sufficient, and they have been selected because the circulatory and nervous systems enter into the performance of all functions, and are indispensable to every part of the body, while in the diseases of the digestive and respiratory systems are found the causes of the greatest mortality of childhood. Indeed, it may not be amiss to state definitely that reliable statistics show that about forty per cent of all people born die before reaching the age of five years, and, certainly, one-half of these in the first year of life; and that, further, diseases

of the digestive organs cause about forty per cent of the deaths occurring in the first year, and diseases of the respiratory system about half as many in the same time.

In the first years of life, and more particularly in the first months, any departure from the normal food of infants results in a series of disturbances directly due to the features of development considered above. If mother's milk be supplied, and disturbing factors be eliminated, digestion ensues, as follows: The fluid is immediately introduced into the stomach without preliminary detention in the mouth, either for mechanical changes or chemical action, as there is neither a starch constituent in the food nor a starch ferment, as this time in the scant salivary secretion. In the stomach a rapid casein coagulation and digestion occurs, commensurate with the short stay in this almost tubular and sphincterless organ, and absorption follows close on this change. Entering the intestines, the albuminoids are still further transformed by the weak pancreatic juice; the sugar is also similarly affected, and both are rapidly absorbed. The disposition of the fat is by no means so clear, as it is asserted that the fat digesting function of the pancreas is but feebly performed, and the bile from a deficiency of bile-acids and salts exerts but little influence in preparing this element for absorption. Probably the excessive activity of the lymph-vessels is competent to cope with the extraordinary demands now imposed upon them. This completes the process of active change, and the intestine is largely employed in the act of absorption, the secretion of a weak digestive juice, and in conveying downward the undigested food residue, unabsorbed portions of the bile, mucus, cell debris and other constituents of the fœces.

In this process of rapid transformation and prompt absorption of the proteids there is little opportunity for the appearance of other fermentative changes, and, indeed, there is little indication of the products of such changes in the canal of a healthy, properly fed infant. This seems pre-eminently due to the easy digestibility of the milk proteids, which leaves neither material

nor conditions favorable to the operation of putrefactive and other bacteria.

This outline of digestion must be extended after the first few months to include starch digestion, greater power in the bile action, and rapidly increasing capacity and strength of the stomach. The pancreatic juice is mainly undeveloped until the end of the first year. Still later, all of the functions of the older child are performed, after the appearance of the teeth, and they differ from the adult only in degree and in their susceptibility to disturbance.

Instead of this happy exercise of the digestive functions, let it be assumed that improper food has been given, and the too frequent results follow. If in early months, this commonly is the use of starch and the exhibition of other foods containing too large a percentage of the albuminoids, or such of them as are difficult of digestion. In the former case there follows a free fermentation, the undue formation of gases and the consequent distention of the stomach and feeble digestive tube and the irritation of its exceedingly sensative lining membrane. These immediate effects may be followed by prompt vomiting—so easily induced in the vertical and valveless stomach or by increased frequency of movements from the bowels containing undigested food. In the insufficient digestion of the proteids more marked effects are observed. There are here, also, undue formation of gases and their effects; there is irritation of the mucosa, and there are hurtful products of fermentation foreign to digestion proper.

The food and accessories for the growth of bacteria of many kinds are present, and such bacteria swarm in the tube, and produce ptomaines, which are readily observed, and, unless rendered inert by the excessive metabolism in the liver, become potent for mischief.

Owing to the unstable condition of the nervous and circulatory system at this age, many abnormal conditions result from these disturbances. The distention of the stomach by gases may produce pain, interfere with the circulation and consequently

with secretion, and lead to various abnormal reflex manifestations. The undigested food further irritates, sets up excessive peristalsis, vomiting, and, if continued, inflammation; or so violent an impression is produced as to cause convulsions through the ready reflexes and insufficient inhibition of this age. Again, the ptomaines escaping the liver, may reach the nervous centers and by direct poisoning beget marked disturbance of many of them, notably, the motor, vaso-motor and heat-producing. High temperature, rapid action of the heart, and of the respiration, profound loss of strength, and convulsions—slight or severe—are the sequelæ, and of a gravity seldom seen in the adult from similar causes. The nutritive centers are invaded, rapid wasting induced, and assimilation decreased; the vaso-motors are deranged, the intestinal blood-vessels are relaxed and engorged, and there is an excessive glandular action, followed by inflammation, with its tissue changes and destruction, or there is more immediate and profuse outflow of serum and actual material loss to the economy. It is even possible that the first effect is upon the vaso-motor centers, and the disturbance of other centers are due to anæmia or the reverse. Or, more indirectly, the effect may be upon the heat center and an overheating of the motor and nutritive centers with the production of convulsions, or the wasting of the tissues. It can not be doubted that both reflex irritation and direct ptomaine poisoning are unduly active and powerful at this period of existence, and that they are so from the comparative excitability of the nerves and the absence of inhibition on the one hand, and the deficient antisepsis of the intestinal canal and the readiness of absorption on the other. The absence of delirium and intellectual perversion more prominent in the adult is but an expression of the immature and unformed state of the higher brain masses, and their scant influence upon the general system.

It is to be remembered that all these evil factors are most effective during the process of teething, and to this one instance of development all ills have been ascribed. Possibly because it

is a visible and demonstrable change, and all others are only discerned by accurate observation. A truer conception of the normal processes concerned in nutrition, and the factors chiefly active in their disturbances, has, in more recent years, lessened the use of the all-powerful gum lancet, and has compelled a recognition of the value to life of a knowledge of the laws of hygiene and their strict enforcement. The reaction should not go so far as to declare teething always a physiological and harmless procedure; it is subject to derangement from within and without, as is every physiological action, and, once deranged, it spends its influence upon the same field which but too readily answers to derangement in other functions.

The pulmonary structures in the child are frequently the seat of inflammatory affections, whether induced by irritation from within, or of reflex origin. The full, lax, loosely supported blood vessels are prone to alteration of calibre from reflex effects of trouble elsewhere, and once distended, they readily permit outward osmosis and infiltration of adjacent tissues, besides, by their very fullness, occupying space stolen from the air cells, and so limiting them in the exercise of their important offices. Altered secretion follows engorgement, and profuse cellular proliferation is but the anticipated outcome of oversupply of nutritive material to so embryonic a tissue. The very looseness of the structure of the connective tissue here, renders swelling easy, and promotes the extensions of inflammatory action from one anatomical element to another, or from the bronchial mucous membrane to the alveoli and the parenchyma. The deficiency of fibrin in the blood limits its appearance in new formations, and its place is, in a measure, filled by enormously increased cellular elements, which, in the retrograde processes of resolution, are but slowly, and with difficulty, removed. The laxity and loose attachment of the bronchial mucous membrane, and the proneness of the cells of the walls of the vesicles to enter into the general rapid increase, the tenacity of the scantily formed mucus, and the weakness of the bronchial muscles, all add a mechanical obstacle to efficient aeration, and

this is further enhanced by the weakness of the general muscles of respiration, especially those of expiration, and the lack of appreciation and voluntary effort on the part of the child.

Even gravity successfully aids in the production of mischief by encouraging a dependency and stasis of blood—followed by outward serous transudation—in those portions of the lung kept unduly long in one position, and, from the flexibility of the ribs, kept from receiving the full benefit of respiratory effort. Limited area giving rise to direct oxygen impoverishment, and it in turn influencing the breathing centers, produces an interference with respiration incommensurate with the effect from similar causes in the adult, or spreading further, they may involve still other centers and cause general muscular convulsion. The ease with which the actions of the nervous elements of lung structure are disturbed, may give rise also to spasmodic contraction in the larynx and bronchial tubes. The narrowness of the nasal, larynzeal and tracheal openings and their loose lining, permit of easy obstruction from swelling or inflammation, and allow of another mechanical obstacle to breathing peculiar, almost, from such causes, to the child.

The participation of the apices in the general respiratory movements, which is possible from the mobility of the ribs and the straightness of the upper spine, renders this an unfavorable place for the lodgement of the phthisical microbe, while its detention in the lower lung is favored by the wide lumen of the tubes, the directness of their course, and the greater tendency to stasis in the inferior lobes in the recumbent position. Insufficient expiratory effort encourages retention of sputa, and the relatively strong inspiration may decide their entrance and fixation in the smaller tubes, and as a consequence the ready collapse of the subtended area and an equally easy dilatation of the adjacent air cells. The profusion of lymph channels render absorption easy, and a first consequence is noted in the enlargement of the bronchial lymph glands, so seated in the narrowed upper chest as to cause serious mechanical interference with the air supply. This enlargement may also persist,

in minor degree, and become a favorable starting point for future diseased processes. Even the large heart and high blood pressure in the pulmonary vessels are unable to overcome so many difficulties, and fail in their effort to maintain efficient circulation in the lung, and so aid the frequently fatal outcome of pulmonary inflammation. It should be remarked that irregular and rapid respirations are so easily brought about in the child, as to lose the significance attached to them when occurring in respiratory disorders of a more advanced stage of life.

These examples of the influence of development upon disease have been selected as exhibiting the effect of both functional and structural conditions in the child, which are not found after the attainment of complete maturity; and also as indicating the manner in which affections having their seat in other tissues and organs than those mentioned may be modified by like conditions prevailing in them.

Perhaps the most striking illustration of these influences is found in those diseases which are either limited to the time of growth and increase or are rarely seen at other times. Of the former a prominent example is found in rickets, as it is only in unformed tissues that it can occur, the transition stage between fœtal cartilage and true bone being absolutely essential to its first appearance. Of the latter could be instanced anterior polio myelitis (infantile spinal paralysis) specially prevalent in childhood from the formative condition of the nervous apparatus and the prominence of the cells of the anterior columns of the cord.

These conditions may have a wider range, especially those found in the nervous and circulatory system, and exert their modifying effect upon many different diseases; or may even predispose the young to invasion by affections observed at all periods of life, as, for example, the eruptive diseases, diphtheria and whooping cough.

Again, some diseases acquire a peculiar type in the child, are attended by greater or less fatality, or pursue an irregular course. I need only allude to the short duration, uneventful course, and absence of the graver effects of necrotic changes in

the intestinal glands in typhoid fever, the prominence of other symptoms than the articular in acute rheumatism, and the difference in location and symptoms of tuberculosis.

Congenital defects and malformations are the result of interference in forming tissues, and are themselves the cause of disease in early life, as instanced in the structural aberration in the heart, the insufficient obliteration of the ductue arteriosus, and the not uncommon abnormalities of arrangement in the relative position of intestinal and genito-urinary organs.

The subjects considered in this paper have only recently received the attention their importance demanded, or that the state of our knowledge of the changes occurring in growing tissue rendered possible; but they are daily being more closely investigated, and may yet render possible an explanation of many phenomena which now seem to us obscure.

SECTION ON SURGERY.

REPORT OF CHAIRMAN, A. B. GARDNER, M. D.,

BELLVILLE.

GENTLEMEN OF THE ASSOCIATION: It is the custom of the chairmen of the several sections of the association to give a synopsis of the scientific and practical advancements which have been made in their respective branches of medicine for the past twelve months. But to do so is to reiterate a great deal that is already familiar to the most of you, and renders the report too long to be interesting, besides consuming time which should be devoted to the reading and discussion of original papers. (And I take great pleasure in assuring you that the papers which will be submitted to you this year should interest us all, as they show, too plainly to be mistaken, that we have in our association many earnest and scientific workers.) I shall deviate from the rule of chairmen, and only attempt to briefly refer to a few of the many advancements of surgery which are, in my humble judgment, most likely to be of great practical benefit to surgery.

Since the days of the writings and teachings of Sir Joseph Lister surgery has been on a higher plane; and antiseptic surgery, which he hewed out in the rough, together with the scientific researches of such original investigators as Pasteur and Koch, who have thoroughly demonstrated that the much dreaded terrors of surgery—gangrene, surgical fever, suppuration and septicæmia—all originate from a common cause—the introduction of germs into wounds—which can be absolutely prevented by proper antiseptic precautions. Yet, while these great discoveries were made by English, German and French investi-

gators, it remained for the American surgeon to first systematize and apply antiseptics to general practice in surgery, and to them the world is due an everlasting debt of gratitude, for today, in any country town in the civilized world, can be found one or more doctors who will perform almost any operation with all the modern technique of antiseptic surgery. And the time is past when we had a few great surgeons. We have hundreds today, in the great state of Texas, who will confidently undertake, and successfully perform, operations that would have made masters of twenty-five years ago tremble to undertake.

Surgery of the brain seems to be a field productive of good results, and is making rapid progress. With our increasing knowledge of the different motor centers, tumors, abcesses and traumatisms of the brain can be definitely located, and often their nature diagnosticated.

Broca gives the following as the three classes of indication for trephining:

First—We may be guided by external lesions, as in case of traumatisms.

Second—We may seek for a cerebral lesion of known or unknown nature, the situation of which is diagnosticated by the symptoms induced in the light of our knowledge of the functions of the different portions of the brain.

Third—We may operate without being so guided, when the nature of the lesion has been determined from experience as to the usual seat of such lesions, and the best way to approach them.

The use of the chisel instead of the trephine in the surgery of the head, and especially in the treatment of fractures of the skull, is advocated by Keeting, of England. He would restrict the use of the trephine to such cases, where it is desirable to make a large hole in the skull cap.

Dr. Gerster, of New York, is also of the opinion that the trephine is always an inadequate instrument, and that its use is fraught with danger to the dura. They both claim that the objection raised to the chisel, that the blows of the mallet may

produce concussion of the brain, only holds good in old people, with very artheromatous arteries.

Gerster replaces the chips removed with the chisel. Dr. Weir also speaks favorably of replacing the bone disks removed, which he found to live. Cases of traumatic, cortical and Jacksonian epilepsy are reported by many surgeons, upon which they have used the trephine and chisel with the most satisfactory results.

In the treatment of epilepsy, Dr. Gray says, in discussing the surgical aspect of this disorder, that it is still a question whether true epilepsy is a disease or symptom, and whether the removal of the source of irritation may or may not effect a cessation. Our knowledge of the focal centers is not yet perfect. In a paper read before the New York Academy of Medicine, Dr. Sachs says of the surgical treatment of epilepsy: "It is not a disease, but a symptom. Yet, in the present state of our knowledge, we cannot always point out the lesion which causes true epilepsy, but this may be done by further improved methods." He thinks that in cases of traumatic or organic lesions an operation should be done as early as possible, in the hope of preventing secondary sclerosis. Surgical interference in microcephelus has yielded the most flattering results. Lanneloque reports twenty-five cases upon which he performed linear craineotomy, with only one death, most of the cases showed marked mental improvement, after the operation. Keen, Ranshoff, Auger, Prewitt, McClintock, and others, report having performed linear craineotomy for this trouble, with the most satisfactory results.

Dr. R. F. Beckman reports a rare case in which pericardiatomy was done after trephining the sternum, with a successful result. Many other cases are reported in which free incisions were made into the pericardium, and as much as eight ounces of pus evacuated. The pericardium washed out with antiseptic solution, and in some, drainage tubes left in the pericardium, with the best of results.

The most marked advance, in my humble opinion, in the

treatment of thoracic diseases, is in the treatment of pulmonary abcesses—which is thus described by Runberger:

"To excise a large portion of a rib directly over the abcess and to make a free incision into the pleura and abcess, empty it of its contents thoroughly and wash out the sac with antiseptic solutions. Complete recovery follows."

M. Poirier in the British Medical Journal of September reports the results of twenty-nine cases of tuberculosis treated by incision of cavity and antiseptic treatment of cavities. Improvement took place in fifteen cases; cures resulted in four cases; in nine the results were negative; one case lost sight of —result unknown.

With further experiments and improved technique we may reasonably hope for the most gratifying results from this operation, as it appears to me to be the only rational treatment of tuberculosis I have ever seen advocated. knowing as we do that this is purely a germ disease, and our success in the treatment depends on the removal of the cause, which can only be done by local treatment.

Surgery of the abdomen, of late years, has become a favorite field for the ambitious young surgeon, and he who has not performed a laparotomy, if for no other cause than to remove an inoffensive ovary from its snug hiding place, can hardly call himself a surgeon. And here it is that antisepsis has been of as much or more benefit to the surgeon than in any other class of operations. Porges reports a case of carcinoma of the greater curvature of the stomach, with a tumor the size of the fist. Under chloroform a transverse incision nearly eight inches long was made one inch beneath the xiphoid process; from the middle of the right rectus abdominalis to the left costal cartilage the stomach was drawn out, the cardiac and duodinal ends tied with iodoform gauze, and the tumor and stomach up to one inch of the gauze ligatures removed by transverse incisions; the removal of the adherent panereas was somewhat difficult, and required six ligatures. The lesser omentum was in part ligated and cut away; from the greater omentum a soft oblong

gland was removed; the two cut ends of the stomach were united by sutures in terraces. The operation lasted one and three-quarter hours. The patient recovered, and increased forty pounds in weight. The resected piece was $7\frac{2}{10}$ inches long and 7 inches wide.

Billroth gives the results of 124 cases of resections of the stomach, and intestinal canal, for gastro-enterostomies and removal of scar tissues for chronic diseases, performed in his clinic and private practice, in the past few years. After describing at length the groups of cases, he sums up as follows: That all resections of small intestines and rectum were successful, and in all other class of cases one-half recovered. In all operations he used sterelized silk sutures and stitched serous membrane to serous membrane. He found that a much greater percentage of deaths occurred after gastro-enterostomys than after resections of the pylorus. This he thinks due to the fact that the operation is of necessity prolonged, and are not usually submitted to, until an almost hopeless degree of stenosis of the pylorus and dilatation of the stomach existed.

In stenosis of the pylorus, J. W. Taylor, of Birmingham, England, reports having had good results from digital dilatation in two cases.

W. F. Bull, of New York, reports three cases of cancer of the stomach operated on by him successfully. He thinks the operation of pylorectomy has been simplified by the introduction of Senns plates, and that the mortality would be much diminished. Another departure from the typical resection was that the cut edges of the stomach and duodenum being shut off, so as to form a blind cul-de-sac, and the anastomosis being made between the stomach and the jejumun. The stomach was thoroughly cleansed by the use of the stomach pump, after the patients were under the anæsthetic.

Most all writers of late agree that in all operations of the liver free incisions should be made with antiseptic precautions, and the cavities should be thoroughly cleansed with antiseptic solutions and dressed and kept aseptic. An operation should

be done early in the disease before a large part of the liver tissue is involved in the inflammatory process.

Alexandroff, of Moscow, in a paper in the March, 1892, number of the Medical Journal of Paris, says of laparotomy, for tubercular peritonities, that he recognizes three forms of this disease,

First—Masses of tubercles disseminated throughout the peritonial cavity, without ascites.

Second—Cystic accumulations.

Third—Scattered tubercles, with general ascites.

His first operations were made from a mistaken diagnosis, but the results were so satisfactory that he has performed the operation several times since, with the best results, and the cures have been permanent.

Konig, of Gœttingen, has collected 131 cases of laparotomy for tubercular peritonitis. His personal experience consists of fourteen cases; six of his own cases were completely cured.

Parker Syms, of New York, says the death rate from this operation is only three per cent. Van Hook reports, in the Philadelphia Medical News, of January, 1892, three cases of perforation of intestines in typhoid fever, on which laparotomy was performed, with one recovery. I find nineteen other cases reported as having been operated on, with four recoveries. The high mortality is due, to a great extent, from delaying the operation until general peritonitis has set up.

The general consensus of opinion is, that in all perforations of the bowels, operate early, under the strictest antiseptic precautions, and do the work thoroughly, being certain that all injuries to the intestines and mesentery are given such attention as they require; that no septic material may escape into the abdominal cavity after the operation.

Dr. James Kerr, of Washington, D. C., recommends in gunshot wounds of intestines, a free incision in abdomen, and the removal of the intestines from the abdominal cavity, to be kept warm by being wrapped in warm sterilized towels, and making a methodic examination of the entire tract, tying all bleeding

points of the mesentery and closing all rents. In this way there can be no perforations overlooked.

W. S. Halsted, of Baltimore, calls attention to the importance of the submucus coat of the intestines, in stitching them, from any cause, this being the tougher coat of the intestines. Yet it is often overlooked. When it is included in all sutures, there is no danger of them giving away, and one of the great dangers of this operation is obviated.

Laparotomy for the cure of appendicites has of late created much discussion among surgeons. While all agree that, in certain forms of the disease, an operation is demanded, there is a wide difference of opinion as to when the necessity arises.

W. T. Bull, of New York, reports, in the Medical Record of March, 1893, twelve cases operated on by himself, all successfully. He makes this conservative distinction between those cases which he thinks demand an operation and those which do not: "All cases present features of a chronic inflammation of the appendix, with relapses. In one class of cases the attacks recur at long and irregular intervals and are followed by periods of good health. Each attack is an independent affection, while it undoubtedly predisposes to a recurrence that even may never occur."

While in chronic relapsing appendicitis there is no return to absolute good health, there are always such evidences of disease of the appendix as local pain, or discomfort increased on exertion, tenderness, tumor, and to these are added the frequent, exacerbations of acute inflammation. Several attacks of recurrent appendicitis often induce the other condition of chronic inflammation with relapses. In fact, one attack may do this. It is when this latter condition is fully developed, that I believe the operation is indicated.

Treves, of London, protests against what he calls an epidemic of appendicitis, and says he would urge that more discrimination should be exercised in selecting the cases which are suited for operation; while, on the other hand, there are such men as Duckworth, of London, McBurney, of New York, and a host of

others, who insist that the vast majority of cases seriously endanger life, and, therefore, all cases should be considered with a view of surgical interference. Duckworth says that delay is little short of criminal negligence.

There are many other subjects of interest to which I should like very much to refer, but shall refrain, and ask your attention to the many valuable papers before us.

WHITEHEAD'S OPERATION FOR HÆMORRHOIDS CONSIDERED FROM AN ANATOMICAL AND PATHOLOGICAL STANDPOINT.

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Whitehead's operation for hæmorrhoids, as you are doubtless aware, has for its object complete excision of the whole pile bearing area. It is this area and its minute anatomy that I wish to describe, basing my remarks on some investigations conducted in the dissecting room and at the operating table.

Complete separation of the mucous membrane of the lower inch or so of the rectum from its investing structures is an easy procedure, either on the living subject or on the cadaver. The mucous membrane can be separated as high as the upper border of the internal sphincter without the least danger of hemorrhage, provided that the mucous membrane alone is lifted from its bed. The junction of skin and mucous membrane is carefully divided, and a cellular interval which intervenes between it and the sphincter muscles is opened into by a few snips of the scissors. This loose cellular tissue extends above to the upper border of the internal sphincter, where it blends with the submucous coat of the rectum, which in this situation is close, and firmly binds the mucous membrane to the circular muscular coat. At this level a vertical section shows the following relation of structures: The horizontal muscular coat ceases abruptly, and is lined on its outer side by a prolongation of pelvic fascia, which is continuous with that lining the upper surface of the levator ani. The circular muscular coat changes abruptly into a thick bundle of fibres called the internal sphincter. This muscle is strong, and encircles the gut for about one-half inch, tapering below to a free edge, which is about one-half inch from

the anal margin. Above, on the outer side, it is joined by some fibres of the levator ani and a process of the pelvic fascia, while on the outer side below it is overlapped by the external sphincter. Above and internally the muscle is firmly attached to the mucous membrane by the firm, dense, unyielding sub mucous coat, while below the loose cellular tissue above mentioned intervenses between it and the mucous membrane. The internal sphincter is easily brought into view by a clear dissection, and is seen in all its glory during a well conducted Whitehead's operation.

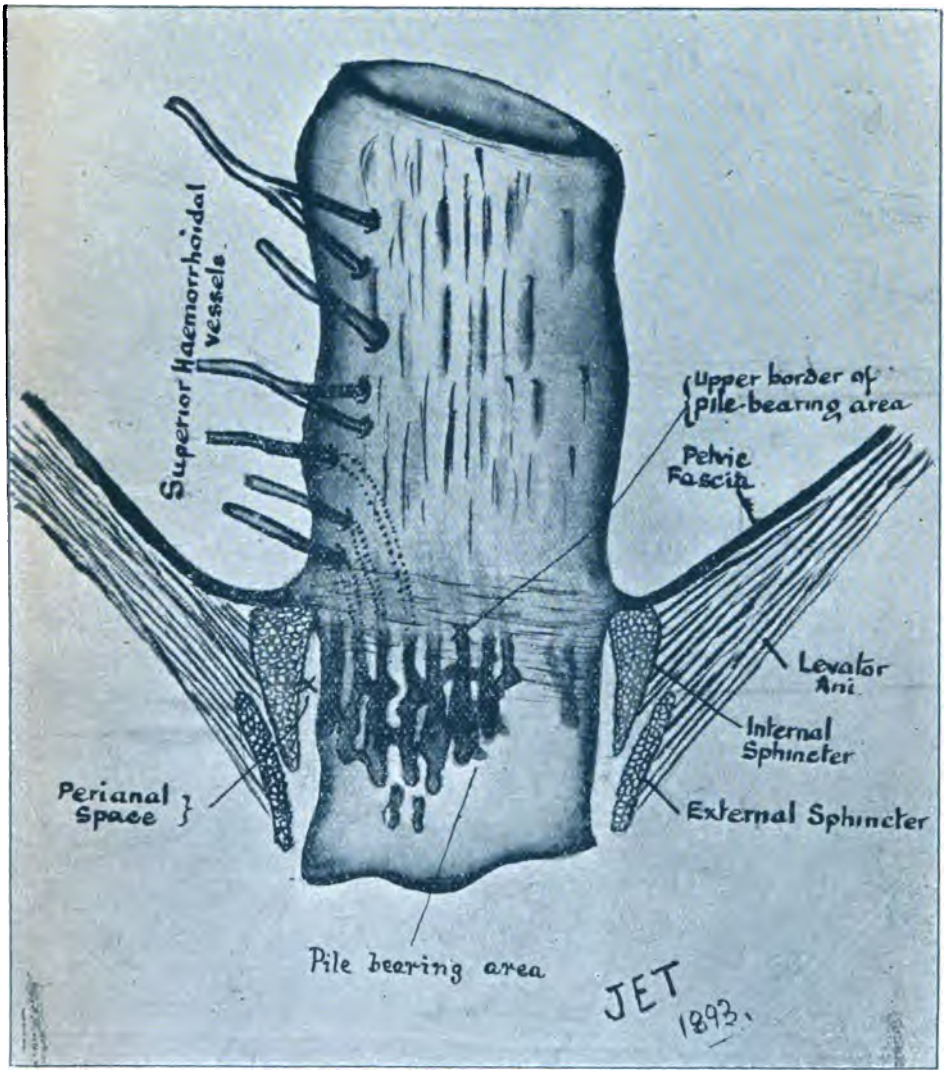
The external sphincter is a thin band of voluntary muscular fibres surrounding the anal margin. It is seen but poorly in the dissecting room, and rarely comes into view during operative procedures. It supports the outer surface of the rectal mucous membrane below the level of the internal sphincter, being separated from it by the loose sub-mucous space above referred to.

The space to which I will give the name "*peri-anal*" has the following relations: It is almost an inch in length; internally, it is bounded by mucous membrane; externally, by the two sphincter muscles. Above it is closed by the junction of mucous membrane, dense sub-mucous tissue, and the upper margin of internal sphincter. Below is closed by the union of skin and mucous membrane.

The blood vessels of the rectum deserve some description, and my results have been drawn from dissections performed on specially injected subjects. After careful study, I came to the following conclusions:

There is a particularly complete anastomosis between the portal and the systemic system of veins in connection with the rectum. It is curious here to note the statement made by [1]Ball, that an injection forced into the superior hæmorrhoidal veins fails to reach the middle and inferior hæmorrhoidals. In our investigations, we found the anastomosis so complete that the injected material (Prussian blue and gelatine) passed into the pudic and internal iliac veins, filling them up. The injec-

1 Ball. Rectum and Anus, p. 219.


Superior Haemorrhoidal vessels
Upper border of pile-bearing area
Pelvic Fascia
Levator Ani
Internal Sphincter
External Sphincter
Perianal Space
Pile bearing area
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tion of the superior hæmorrhoidal vein showed that its radicles started at the anal margin and coursed up the rectum as parallel trunks with anastomosing lateral branches. The whole of the blood supply of the rectum under normal conditions passes into the superior hæmorrhoid trunks. The veins of the lower inch of the rectum (corresponding to the peri-anal space) were closely connected with mucous membrane, and no branches, except a few anastomosing trunks, crossed this space. At the upper border of the space the veins passed through the muscular coats at varying levels to reach a chain of vessels which formed the superior hæmorrhoidal.

The connection of the superior hæmorrhoidal with the systemic system of veins is very complete and occurs in two situations: (1) On each postero lateral aspect, about a third of an inch from the anal margin, a fairly large and constant vein was seen to leave the rectal network and pass across the peri-anal space, where it pierced the internal and external sphincter muscles and joined the main trunk of the inferior hæmorrhoidal. (2) In front a similar vein was seen to pierce the sphincter muscles and anterior fibres of the levator ani. It passed to a plexus on the lateral aspect of the prostate, whence proceeded a large trunk to enter into the internal iliac. The arteries practically follow the same course as the veins. The terminations of the superior hæmorrhoidal run down as low as the anal margin, as small, fine vessels with lateral offshoots. They pierce the muscular coats of the bowel above the margin of the internal sphincter, and the lowest trunks course down on the mucous membrane on the inner wall of the peri-anal space. No anastomosing trunks pass across this space to communicate with the inferior hæmorrhoidal artery.

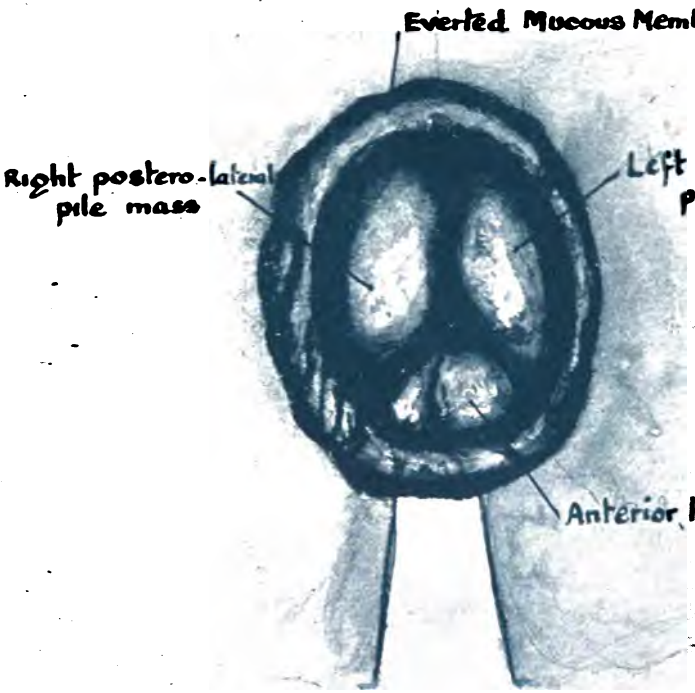
The middle hæmorrhoidal artery arises from the internal iliac. It courses to the lateral aspect of the prostate, gives off here a vesicle artery, and then perforates the pelvic fascia, anterior fibres of levator ani and internal sphincter muscle, anastomosing on the front rectum with the terminal trunks of the superior hæmorrhoidal. This anastomosis is very insignificant. The

connection between the inferior and superior hæmorrhoidal arteries, which is quite insignificant, is made at the anal margin. The inferior hæmorrhoidal artery spends itself mainly in the external sphincter and cutaneous structures. A glance at the specimen I hand around will show the arrangement of the veins in the "pile area." They are arranged in three distinct masses or columns, which are placed severally, one on each postero-lateral, and one on the anterior segment. The distention extends from the anal margin, where the veins are extended like a spray of coral, to the upper margin of the sphincter, where the veins are collected into a number of parallel trunks. At this level the distension ceases abruptly.

If an examination be made of an advanced case of piles, the appearances are only an exaggeration of those found in this specimen. A glance at the diagram will show what one usually observes. Three large pile masses can be made out, having postero-lateral and anterior positions respectively. The anterior mass, which is usually half the size of the others, corresponds to the anterior radicles of the superior hæmorrhoidal veins and arteries, and their anastomoses with the middle hæmorrhoidal and vesical vessels. The two postero-lateral masses correspond to the anastomoses of the superior and inferior hæmorrhoidal vessels.

This disposition of the parts is almost invariable, and has been present in all cases that have come under my observation. It may not be clearly seen before complete dilatation of the sphincter, but, after dilatation, the prolapse of the pile area will invariably demonstrate this peculiarity. This is of importance, for on it depends the proper treatment of the vessels in the later stages of Whitehead's operation.

It is not my intention to discuss in detail all the causes that have usually been described as producing a varicose condition of the lower end of the rectum. I wish only to lay stress on the anatomical peculiarities of the vessels in this situation. The anastomosis is complete, the veins have no valves, and the greater part of the venous blood, under ordinary circumstances,



JET
1893
after Ball.

passes up the superior hæmorrhoidal vein to the portal vein and thence through the liver. If from some cause this natural outlet is obstructed, the blood must find some other channel, which it obtains by its communications with the vesical, middle and inferior hæmorrhoidal veins. These outlets are evidently inadequate to allow a free flow, and as the superior hæmorrhoidal arteries are still carrying blood into the area, of necessity an undue distension of the superior hæmorrhoidal veins must result.

Now, consider the anatomical relations of these veins. Above the margin of the internal sphincter they are firmly supported by dense sub-mucous coat and circular muscle. Here they can not dilate. Below this point they lie in a comparatively loose cellular layer, which gives them practically no support. In consequence, undue distension results, entailing in its course chronic phlebitis, thrombosis and, in fact, all the phenomena which may accompany varicosities. Of course, the existence of this loose cellular space is only a predisposing cause. There is probably some other factor at work in the production of true hæmorrhoids, beside mere distension of veins.

The importance of the peri-anal space in Whitehead's operation can not be over estimated. It enables the rectal mucous membrane to be separated from the adjoining tissues without the slightest injury to the sphincter muscles, and without any hemorrhage. As performed by Whitehead, the operation is done in the following manner:

The bowels are thoroughly prepared by a purge and an enema, and it is often advantageous to irrigate the rectum with warm borac lotion before the operation commences. The patient is placed in the lithotomy position and thoroughly anæsthetised. The anal aperture is now carefully and thoroughly stretched by the operator's thumbs. The stretching must be thoroughly accomplished, otherwise the operation will be rendered much more difficult. The prolapsed pile area is now brought into view and forceps are placed on each of three pile masses. With a blunt pointed pair of scissors, the junction of skin with mucous mem-

brane is carefully divided, and a few snips of the scissors are sufficient to bring us into a cellular interval (the peri-anal space) between the mucous membrane and the sphincter muscles.

By passing the left forefinger into this space, one can with ease separate the mucous membrane from its surroundings, and the separation is aided by passing one blade of the scissors along the finger into the wound, and cutting out to the other blade, which lies in the skin incision. The whole pile area is thus separated as a tube, and is dragged down by the attached forceps.

The extent to which the separation is carried is determined by the adhesion of mucous membrane to its surrounding structures above. The internal sphincter is seen as a broad, strong band, and by pulling down the tube, it is turned somewhat inside out.

The tube of mucous membrane still being dragged on, a transverse slit is made in its side, at its lower part, and is carried for some distance circularly around the bowel. Any vessels that are divided are either tied with catgut or are twisted. The upper margin of the slit is now attached to the margin of the skin by an interrupted silk suture. Catgut is preferable. The slit is enlarged, vessels are secured, and mucous membrane is attached to skin, and one proceeds thus until the whole pile bearing area has been removed in the form of a ring, the upper portion of bowel being united to the skin as fast as it is divided. By doing so, there is no chance of the gut retracting beyond our reach.

[1]Whitehead claims almost perfect results for this operation, and in his hands it is certainly the most successful of all procedures. He hardly ever ties a vessel, but twists them as soon as they are cut. This is usually sufficient to stop all hemorrhage.

In most cases it might be advisable to employ a method suggested to me by Dr. Sampson, which I have found to have a practical bearing on the simplicity and bloodlessness of the op-

1. Brit. Med. Journ., Feb., 1882; Feb., 1887, p. 449.

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1893

eration. After the tube of mucous membrane has been separated from the soft parts, a loop of catgut is thrown around the vessels which pass into the bases of the three main pile masses. This can be passed quickly and easily by threading a needle once. It is a kind of a Staffordshire knot and, when completed, the loop of vessels is firmly constricted, and from the depths of the wound catgut strands emerge, which give us full control of the rectum after the pile area has been removed. The strands of catgut are cut short and buried in the wound when the attachment sutures are inserted. The method of passing the loop is simple, and can be better shown than described. (See diagram.)

In concluding this paper, which, by no means, includes the whole subject, I wish to lay stress on the advantages that Whitehead's operation possesses over other procedures. It removes completely the pile-bearing area, and a return of the disease is practically impossible. Whitehead has never had a single case of recurrence. Can the same be said of the other operations, such as ligature, clamp and cautery? The dangers of the operation have been much exaggerated. They have arisen from a meagre acquaintance with the procedure, as it is an operation that requires to be seen before it is thoroughly appreciated. The dangers from hemorrhage are not great. Of course, one occasionally meets with cases where the tissues bleed freely, but, given good attention to operative detail and attentive nursing, hemorrhage need not be feared. The chances of hemorrhage are reduced to a minimum if the blood vessels are ligatured en masse, as I have previously described. Other objections that have been urged against it are tendencies to stricture and incontinence of faeces.

Stricture has never followed any of Whitehead's operations. In those cases where it has occurred the surgeon has probably removed too much skin, and has failed in the one cardinal rule that Whitehead laid down, viz., that the skin incision ought to follow all the sinuosities of the anal margin, and that nowhere must any skin be removed.

Incontinence of fæces results from the surgeon missing the loose cellular space and cutting blindly through the sphincter muscles. A mangling operation of this nature is very likely to be followed by permanent incontinence. If, however, the sphincters are left intact, incontinence never results.

A MODIFIED OPERATION FOR HÆMORRHOIDS.

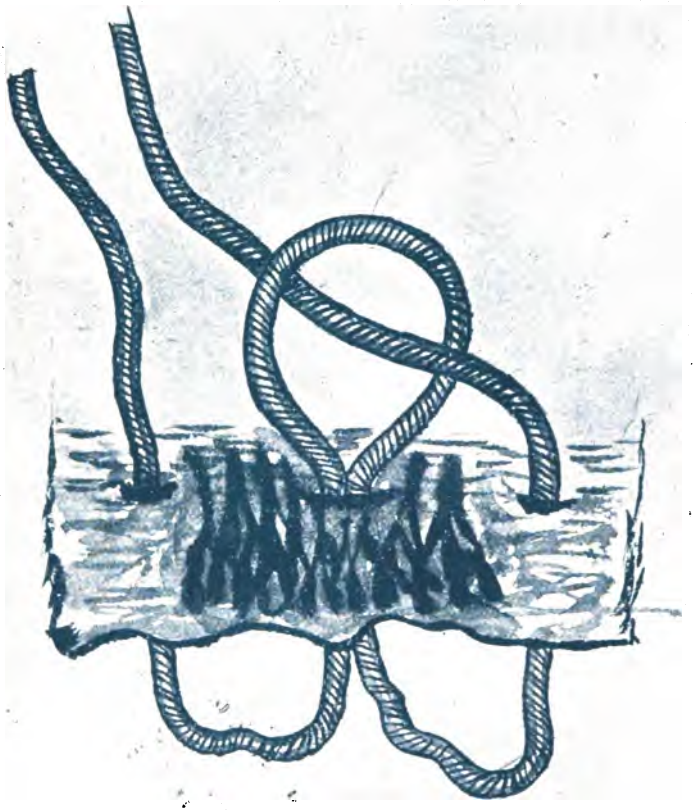
A. F. SAMPSON, M. D.,

GALVESTON.

The essential considerations for us to dwell upon in selecting the kind of operation we should do, are: First, the casualities attending the method; second, the results achieved by the method; third, the pain that is consequent of the method; fourth, the duration of the convalescence. With these cardinal points in view, we must give the Whitehead operation precedence over all other methods. The advantages that the Whitehead operation for internal hæmorrhoids present over other methods for a speedy and rapid cure need not be extolled here; rather let us meet the adverse criticism that is so prone to fetter progress.

The objections to the Whitehead method have narrowed down to two conditions, viz., the time required for its performance, and the hemorrhage. In regard to the first protest, while slow and tedious surgery is to be deprecated on the one hand, on the other hand we must commend thorough and complete surgery. Those who are familiar with the technique of Whitehead's will concede this objection as to time carrying but little weight.

The hemorrhage in Whitehead's method has been a valid objection. To overcome this, I have devised the following modification, that has clearly demonstrated its efficiency in controll-



Method of passing
Ligature.

JET
1893

ing primary as well as secondary hemorrhage: Proceeding, as in the Whitehead method, to dissect out the pile-bearing area, with its piles and diseased mucosa, we find, when this has been done properly, that very likely no blood vessels have been opened that requires catching; for after the muco-cutaneous ring has been snipped through with the scissors, we should get into that loose connective tissue plane, that separates so easily that the finger is generally found sufficient to complete the dissection up to the internal ring, and this is done without injury to the blood vessels supplying the piles. Bearing in mind that the blood vessels to the pile bearing area enter the mucosa of the gut above the internal sphincter, therefore, if in our dissection so far we have kept in the proper plane of tissue, we are safe from wounding the important vessels.

Our dissection having been carried up to the internal sphincter, we now proceed to locate the site of pile tumor, for it is from this location that we are to expect hemorrhage when severing the mucosa. To control the blood vessels supplying the pile, I devised a loop-stitch of catgut, that is made to transfix the mucosa at the junction of the internal sphincter just above the pile. This is accomplished by passing a needle, eye at the point, threaded with a double loop of catgut, entering at the bottom of the dissection, through the mucosa, on to the free surface of the bowel. The loop being caught on the free surface, the needle is withdrawn and freed of the ligature, thus getting a loop of catgut transfixing the mucosa on a level with internal ring and on a vertical line just above the seat of a hæmorrhoidal tumor. The needle, now freed of ligature, is inserted about two or three lines laterally to the point of first puncture, carried through to the free surface of bowel, where it is threaded with one end of the catgut (the loop being cut through) and withdrawn; thus we have secured a loop ligature through one half of this hemorrhagic area, having firmly tied the ends in the bottom of the dissection. The same steps are taken with the other ligature, and, when complete, we have a most thorough and safe ligation of blood vessels to that pile locality.

The course of the vessels being vertical, the loop ligature being horizontal, insures additional safety against hemorrhage. Repeating this loop ligaturing, where we find the condition of the parts indicate their need, until we have covered the ground. Generally, three such loops have been found sufficient, as we chiefly find the prominent piles to be two lateral and one anterior. The ends of these ligatures are retained long, as they serve a very useful purpose in retracting the healthy mucosa to be brought down in uniting it with the external incision. They also serve as good guiding points in severing the diseased mucosa at the upper limit of the pile-bearing area.

We should guard against taking up too much of the circumference of the bowel in making these loops, also in taking too large a bite of tissue in each loop, so that we do not pucker up the gut too much, thus not being able to adapt it to the external incision. Now, having removed this area of pile-bearing tissue, with all the piles and diseased mucosa, as I have done in one complete ring, we proceed to suture with catgut the retracted end of the bowel to the external surface incision, so that when complete, there is no raw or abrated surface at all left exposed to slowly granulate and heal up, being a source of constant torture to the patient.

The healing process is reduced to linear union of two surfaces accurately opposed to each other where we find rapid union results, so that in three days we get union, and on the fourth day I have had my patients up and about.

The advantages of catgut are sufficiently apparent, as we are not called upon to touch the wound after operation is over.

Prof. J. E. Thompson has suggested a simpler and readier method of getting the loop ligatures applied, which is really a very ingenious Staffordshire knot, made with needle eye on point.

DISCUSSION ON DRS. THOMPSON AND SAMPSON'S PAPERS.

DR. HADRA said he used to do Whitehead's operation about three years ago, but after his experience with a very intractable stricture which resulted in one case, and after having learned that the same had happened in the hands of the most celebrated surgeons, he thought the operation ought to be confined only to the worst cases where there is no sound mucous membrane left, and where the risk may justly be incurred. In all other cases the usual methods of ligating, clipping, etc., will give good results without any risk of stricture. The stricture was due to the cutting of the stitches through the tissues owing to tension, thus allowing the upper line of incision to retract upwards, leaving a surface denuded of mucous membrane, which slowly cicatrized and contracted. This may take a year, or at least several months, so that we are not justified in pronouncing a case safe from stricture before that time. Professor Kelsey's experience coincided fully with this view. The advice of an English surgeon—whose name Dr. Hadra did not remember—to leave a strip of mucous membrane on each side, seemed to him to suggest a great improvement. He thought it was an excellent idea. Dr. Thompson's paper was a most welcome contribution to the anatomy of the venous supply of the anus and rectum. He, Dr. Hadra, confessed that he had never before met such a clear description of the important relations of the hæmorrhoidal veins. The books quote one from another a somewhat mixed anatomy, but here we get a demonstration of the true conditions that settles the matter for good.

DR. JAMES KENNEDY: I have listened with much interest to the able papers just read by Drs. Thompson and Sampson, and the discussion of Dr. Hadra. I consider the objections raised by Dr. Hadra to Whitehead's operation to be very valid indeed. As Dr. Hadra has remarked, cicatricial contraction, the process by which strictures are formed, is very slow, and much time must elapse before we can consider a patient safe from such accident. The retraction of the bowel, due to a sloughing of the sutures, is an accident which sometimes occurs, and when it does so, it becomes an ugly condition to deal with. Dr. Kelsey, of New York, has recently reported a case in his own practice where this unfortunate accident occurred and left the patient, who was a young physician, in a very serious condition, necessitating a second operation. The operation proposed by Allingham, to which Dr. Hadra has alluded, seems to possess advantages over the Whitehead's method, inasmuch as this accident—the retraction of the bowel—is obviated on account of the lateral strips of mucous membrane which is purposely left intact.

DR. C. F. PAINE supposed every surgeon had his own favorite operation. He, himself, used clamp and actual cautery, and had never tried any other method, except hypodermic injection of carbolic acid. He had no reason to be dissatisfied with the results.

DR. B. F. BRITTAIN disclaimed the title of pile doctor, which some of his friends were disposed to give him. He had not treated piles by cutting operations. He supposed all operations are successes, so far as removing the piles, but some of the Goliath's were giving them up. There were three kinds of piles to be met with:

1. Venous piles, which resembled a bunch of grapes.
2. Arterial, which looked like a raspberry, were a little elevated and more sensitive than the venous.
3. Cappillary, reddish but not elevated.

He recommended those who failed in operation to use caustics. He was aware that eminent surgeons condemn this method, but it didn't matter, so long as Dr. Brittain didn't. Let the patient strain and bring the pile outside; then inject with carbolic acid. Allingham was down on this method, because he didn't invent it. Use two or three drops of a mixture of one-third carbolic acid, one-third water, and one-third glycerine in each tumor, and repeat several times, if the patient can't stop work. If the patient can lie up, give enough to cure pile at one sitting. Inject slowly, and as the acid appears through the pile, toward lumen of bowel, the pile will become whitish; then stop. Inject not more than two or three piles at a time.

DR. J. E. THOMPSON said he had never known stricture to result from Whitehead's operation. He had witnessed nearly all of the operations performed by Whitehead, himself, and he could state, as a matter of positive knowledge, that in no case was the operation followed by stricture.

DR. HADRA said that Whitehead's operation might be good in the hands of a master, but for general practice he did not think it was the best. If the whole surface of the lower bowel be diseased, something like Whitehead's must be done, but he thought it had best not to be done wherever it was possible.

TREATMENT OF DEPRESSED FRACTURES OF THE SKULL.

P. C. COLEMAN, M. D.,

COLORADO, TEXAS.

H. C.; age 11 years. Was presented by his parents with the following history: Three months previously the child had been kicked on left side of head by a horse, and, though knocked down at the time, with assistance of a smaller brother he got up and walked to the house, several hundred yards, but did not speak after receiving the blow. In a short time hemiplegia of the right side developed. The physician in attendance advised delay in operating, saying he thought it likely it would not be necessary. Consultation was had, and operation insisted on, but, yielding to opinion of the physician first called, it was not done. In the course of a few weeks the child was able to be up, with some little improvement in paralysis.

At the time I first saw the case, three months after the injury, the child was very much emaciated, scarcely able to walk, speech very indistinct, partial hemiplegia, pulse rapid and weak, so much so I seriously doubted if he would stand operation, but, as it was demanded, I advised it be done at once.

Over site of injury the scalp was bulged, except upper margin, in which there was an opening, from which there was escaping pus.

It was stated that about every two weeks since the injury there had been great swelling, high fever, when the discharge of pus would be very profuse, and then the patient would be better for some days, until pus again accumulated. Patient was at once prepared for operation. It was determined to use ether instead of chloroform as the anæsthetic, owing to the excessive weakness of the heart's action. In this we found we had made a mistake, as the ether produced so much congestion, hence prolonging time of operation.

The scalp was shaved, cleansed with bi-chloride solution, (antiseptic precautions, of course, used throughout) and dissected back by crucial incision. There was found an oval opening in the skull two inches long, one inch wide, involving frontal and left parietal bones, two-thirds in front of coronal suture, just over first, second and third frontal convolutions of left hemisphere of brain, and bulging through

it hernia of the brain. Meninges had been destroyed by suppuration, consequently the brain tissue was pressing directly against scalp. Hemorrhage was excessive, and was controlled with great difficulty by application of cold, torsion and ligatures. I had made peripheral constriction by throwing around the head a strong rubber band beneath the occiput, but it seemed to be utterly futile in preventing hemorrhage.

It was found on either side of depression the bone had been turned at right angles to skull, and was pressing into the brain for some depth. Partial bony union had occurred, and it was with great force the depressed portion was separated. At this juncture there was marked heart failure, very labored respiration, and cyanosis of the surface. It seemed that the patient would live only a few moments. Brandy was freely administered hypodermically, and with artificial respiration we succeeded in restoring circulation so we could proceed with the operation.

All depressed bone around the margin was removed. From the condition of brain tissue I felt certain it had absorbed a quantity of pus, and thinking, perhaps, by force of gravity, it had dissected its way deeper into the brain, I pulled aside that portion protruding through the opening, and gently passed my finger between the convolutions, when, at a depth, perhaps, of two inches from the surface, there gushed out at least an ounce of pus. The brain was thoroughly washed with bi-chloride solution, scalp wound closed, being left open at two points to allow free drainage, and a compress of bi-chloride gauze and bandage applied.

July 15, 6.30 p. m., eight hours after operation: Pulse, 130; temperature, 100; no pain. July 16, 8.30 a. m.: Pulse, 120; temperature, 99 2-10. July 17, 8.30 a. m.: Pulse, 120; temperature, 98 8-10. July 18, 8.30 a. m.: Pulse, 120; temperature, 99 5-10. July 19, 8.30 a. m.: Pulse, 120; temperature, 99 6-10.

Wound in healthy condition; discharge of pus growing less each day; paralysis improving; speech more distinct. From this time on there was gradual improvement, and at this writing, four months after operation, patient has entirely recovered from paralysis, except permanent loss, to some extent, from atrophy of right arm; articulation distinct; returned to school and parents report that they can not see that the mind has been affected by the injury, except that the child is more irritable; this, however, may be attributed to habit, and will be overcome by time.

I am indebted to Drs. Terrell and Phenix for their kind assistance in this operation.

In submitting this case for your consideration, I would call attention to the following points of interest: Tolerance of the brain to the pressure of a foreign body for a length of time while in a state of active inflammation; destruction of brain tissue from suppuration without impairment of mental faculty; complete recovery from hemiplegia, except slight loss of use of arm.

My observation in this case, in connection with others, confirms Flint's teaching in "Cerebral Localization." "Taking into consideration all the pathological facts bearing upon the question, it seems certain that in the great majority of persons the organ or part presiding over the faculty of language is situated on the left side at or near the third frontal convolution and the Island of Reil, namely in the parts supplied by the middle cerebral artery."—*Flint's Physiology*, p. 622.

While some will, doubtless, question the position I advocate, in injuries to the head, to make an exploratory operation, including opening the skull, if necessary, in all cases of doubt, I contend is based upon the teaching and practice of the most progressive surgeons of the day, as published in recent journal literature, not upon the teaching of text books, for they almost invariably advocate the so-called "conservative do-nothing" plan, "wait for urgent symptoms," laying the foundation for epilepsy, or may be insanity.

We find, in one of our leading text books, the unconditional endorsement of the following proposition, and, remarkable though it be, it was written as late as three years ago: That it is better to leave imbeded in the brain a foreign body or fragment of bone, rather than use any force in its removal. (Principles and Practice of Surgery, Ashhurst, 1889, page 339.)

In this connection I can not do better than to quote from the late lamented Agnew. While discussing the subject of traumatic epilepsy, he says: "It is not saying too much to assume that surgery is responsible for the great majority of traumatic epilepsies. The old members of our profession can not, of course, be held responsible for not practicing those methods,

which time, observation, vivisection and knowledge derived from collateral branches of study have made possible. They said human life is too precious a thing to be jeopardized by overstepping the bounds of a wise conservatism. On the other hand, no charity can relieve him from responsibility who, from being wedded to old traditions, and who can discover nothing valuable outside of his own narrow horizon, declines to keep step in the grand procession. The doctrine that depressed fractures of the skull without symptoms required no operative interference, a doctrine which in the past has been so deeply rooted in the professional mind, I hold to be responsible for very many of the sequels of head injuries. However small may be the depression which follows a fracture of the cranium, save in one or two localities, it will encroach enough upon the dural nerves to cause more or less irritation, which, though insignificant at first, and not at all recognizable to the consciousness of the patient, yet will be eventually propagated to the cortex and brain ganglia until finally the paroxysmal explosion occurs. *Whenever, therefore, in my judgment, the profession can accept the doctrine that all depressed fractures of the cranium, however slight may be the depression, and entirely irrespective of pressure symptoms, are proper subjects for trephining, then will traumatic epilepsy largely disappear;* indeed, I am sure that he who will propose to tabulate at the end of the next twenty-five years the cases of epilepsy will find, as compared with the present time, a meager supply for his purpose. It is not improbable, indeed, in view of the greatly diminished risk from trephining, that the operation will be extended to cases of simple fracture or fissure of the skull." (University Medical Magazine, October, 1891.)

Showing the importance of exploratory operations, the two following cases are in point: Two men engaged in a difficulty; one struck the other on the side of the head with a rock the size of a man's fist, which, however, did not stop the fight, and from which the party felt no inconvenience. It was sure the force had been sufficient to crush the skull, and though all "urgent symptoms" were absent, upon enlarging the scalp

wound I found the skull was penetrated, and a sharp corner of the rock had cut into the brain. I trephined the skull, lifted the depressed bone, and the patient soon recovered. A woman sitting behind her husband while he was cutting wood, the axe flew from the handle and struck her on the side of the head. It was thought no injury was done except a slight scalp wound, so she did not consult a physician; in washing the cut the next day the husband detected a small spiculæ of bone. I enlarged the cut, and found the external plate of the skull had been chipped out, one inch long and half an inch wide. The blow was altogether sufficient to have crushed both plates, but fortunately it was a glancing lick.

In operations upon the head my experience has been, because of the profuse hemorrhage, which the surgeon often finds great difficulty in checking, peripheral constriction has seemed useless, it is always advisable to use chloroform instead of ether as the anæsthetic, owing to excessive congestion produced by the latter.

At the meeting of Southern Surgical and Gynecological Association, held in Louisville, in November last, Dr. Reamy, of Cincinnati, mentioning the case of a man who had fallen from the second story of a courthouse, sustaining a fracture of the skull, but had never had epilepsy, or any bad symptoms following the injury, sarcastically remarks: "He thought this case would be some comfort to country practitioners who did not enlarge the scalp wound in all cases."

May this opprobrium no longer rest on the country practitioners.

In all cases of doubt in injuries to the head, I am firm in the conviction, exploratory operation, including opening the skull, if necessary, is demanded; and this is a duty we owe our patients, ourselves, and the future generation.

DISCUSSION OF DR. COLEMAN'S PAPER.

DR. HADRA said that the valuable history given by Dr. Coleman proves that there is yet a great fear of entering the skull. There can be no doubt that the physician who had seen the case first, ought to have examined the wound, raised or removed the loose bone, etc. Dr. Hadra wished to use the present occasion to make a few points in brain surgery. The first was that trephining in the usual way, even with an inch trephine, was a very unsatisfactory method in cases where we have to search for the trouble. In order to see well and to see all, it is generally necessary to raise a large bone flap, according to Wagner's method, to do the so-called temporary resection. A flap as big as a hand may be raised with the same risk with which a smaller piece is taken out of the skull. If such a step is taken, then the diseased tissue may be detected. It is a mistake to go only by localization, with or without using electrical irritation. By such means only the focus that presides over the morbid convulsions or contractions is found out; and if we remove this focus we often will do nothing but break the abnormal circuit. In a great many instances this focus is not by any means the primary seat of the trouble; it is only morbidly excited by some neighboring abnormal substance, which is clearly proven by the successful result of removing foreign bodies, like bone spiculæ, etc. In the same way a cyst, a glioma, a degenerated piece of brain, or something similar may irritate the focus, and it is our duty to remove the former and not the latter. Thus, localization will direct us to the locality of the trouble in general, but to get fully posted, we must use further means. If the surface of the brain be sufficiently exposed, which often requires incision or removal of the arachnoid, then we may be led by the abnormal color, by the elasticity, by the blood supply, etc. A puncture may be made, an incision, or even a slicing off of the surface to strengthen the diagnosis. In regard to electricity he was inclined to the belief that such portions of the motory zone as do not respond to the current, were more likely to be the seat of disease than those that do so, because the former must evidently be degenerated, or at least diseased, whilst the latter, performing their full duty, cannot be disturbed very much in their structure.

There is no reason to be over timid in working on the surface of the cerebrum, especially over the frontal convolutions of which the anterior part is almost useless, at least so far as our present knowledge goes. Large pieces may be removed from there without doing any harm. He had recently operated on a young man who, after a fracture over this part, had lost his memory. On lifting a very large flap, an ex-

tension portion of destroyed brain was found. It sloughed away after opening the dura. He seems to have improved after that, though the time is too short yet to judge of its permanency. If improvement really takes place, we will know at least one function of this portion of the brain. In other cases he (Dr. H.) had seen large amounts of brain substance lost without much consecutive danger. He cited several cases of his own to show how daring we may be in brain surgery, provided we know what we are doing and which parts we are working on.

Hemorrhage is to the inexperienced a great obstacle, but packing with iodoform gauze is almost a sure way to master it. An operation may be safely interrupted and next day, after the gauze has stopped the hemorrhage, resumed.

Now in regard to Dr. Coleman's case, there evidently the middle meningeal artery was severed. A clot had formed and become infected, proper aseptic treatment not having been carried out. The sepsis then spread and gave rise to a secondary infection—an abscess in the white substance. The paper was a good and timely one.

THE TREATMENT OF TETANUS.

GEO. H. LEE, M. D.,

GALVESTON.

No subject in the whole range of medicine and surgery so strikingly and forcibly illustrates the influence of the microscope in medicine as that of tetanus. Ten years have not yet elapsed since Nicolaier announced the discovery of the bacillus tetani, and yet the aetiolology and pathology of this disease have been revolutionized, or, indeed, first presented, and the indications for treatment outlined and clearly defined.

A reference to the literature of the subject preceding this discovery gives absolutely nothing in the way of pathology except such changes as are present in the spinal cord, also in strychnia poisoning, and in other conditions, the result of increased functioning in the reflex centres. Regarding the cause of the disease, there were many vague and unsatisfactory theories, but nothing tangible.

The discovery of Nicolaier, and the investigations of Kitasato, Rosenbach, Kitt and others, have established the following facts: The indirect cause of tetanus is a bacterium—the bacillus tetani. This organism is found in decomposing animal matters, manure heaps, and in the soil of certain places. It is destroyed by heating to 150° c. Tetanus has been produced repeatedly in the lower animal by the inoculation of small particles of earth. Cultures have been made from the same source, and also by inoculation from the wounds of human beings and of lower animals suffering from the disease, and the disease has been produced in other animals by inoculation from such cultures. It has been demonstrated that this bacillus exists only in, and close about, the wounds of entrance; that it is not distributed throughout the tissues of the individual. Just as

other forms of microscopical life are responsible for chemical changes, a familiar example of which is the production of alcohol by fermentation, so the bacillus tetani gives rise to certain new substances—toxines, and it is to the absorption of these that the disease is directly due.

Four such toxines have been isolated, and their physiological actions described by Brieger. The first tetanine, produced the symptoms of tetanus in mice when given in small doses. The second tetatoxine, was followed by tremors, convulsions, paralysis. The third, not named, produced tetanic symptoms, and also an increased secretion of the salivary and lachrymal glands. The fourth produced clonic and tonic spasms. Certain conditions are necessary for the life of the bacillus, and for its usual function. It is anærobic. For this reason wounds partially cicatrized or protected from the air are most favorable for its development. Further, the presence of another bacterium, as the ordinary bacterium termo, or either of the pus-producing organisms, or a chemical substance is necessary for the proper growth of the bacillus of tetanus. This is probably due to the fact that such other bacteria or chemical interferes with the destructive action of the phagocytes which would destroy the specific bacillus.

A careful study of the physiological action of these toxines shows a striking parallelism with strychnia. The same muscular contractions varying somewhat in character, due to hyperæsthesia of the reflex centres of the cord and medulla, accompanied by a congestion of the vessels of the cord, the result of increased functioning and changes in the gray matter, consequent, most probably, upon this congestion are present. Tetanus is then properly a toxæmia, the toxine produced by a specific bacillus, located only about the wound of entrance, flourishing only under certain conditions; the toxines acting very like strychnia in increasing largely the irritability of the reflex centres of cord and medulla, and producing spasms of the muscles.

The above facts lead the writer to accept the position of those

authorities who hold that all tetanus is of traumatic origin. In the cases of the so-called idiopathic tetanus, it is probable that the wound of entrance was so small as to escape notice, or possibly might have been located at some point in the gastro-intestinal, genito-urinary or broncho-pulmonary mucous membrane.

Following these facts closely the indications for the treatment of a case of tetanus may be clearly defined as follows:

1. The focus in which the toxines are being produced must be removed or destroyed. If the wound is favorably situated for conservative amputation, such radical procedure would be most efficient. In other conditions the free use of the sharp curette, free excision of inflamed and suppurating centres, with thorough application of germicidal poisons, will meet this indication. Of the antiseptics the bi-chloride of mercury, iodol and iodoform were, in the hands of Sormani, of Milan, absolutely destructive to the bacilli. Remembering that the micro-organism is anærobic, the peroxide of hydrogen would seem to be a reliable agent. Aristol probably should be classed with iodol and iodoform.

Kitasato found carbolic acid only feebly active in destroying the germ. Ten hours immersion in a 5 per cent solution did not destroy the virulence of the bacteria, while a one to a thousand sublimate solution destroyed them in 30 minutes. In my cases I have used strong solutions of bi-chloride of mercury (1 to 500), applying them for 15 to 20 minutes and, when I felt safe in doing so, have left a sponge saturated with this solution in the wound. No bad result has ever followed this practice, though it has not been used when the wound was at all extensive. When the traumatism is in one of the mucous membranes, such radical measures may be impossible, but the use of antiseptics should be thorough and persistent, although adapted to the peculiarities of each case.

2. The effect of the toxines upon the general system must be met by antidotes whose physiological effects counteract the symptoms produced by the poisons, upon the same principles as a case of strychnia or other chemical poison would be treated.

If we review the physiology of muscle spasm, we will find that a muscle contracts as a result of direct stimulation, as from a blow, or from an electric current applied to the muscle body. It will contract more promptly and efficiently as the result of a stimulus to the motor nerve to that muscle; and, again, it will contract as the result of a stimulus passing through, or arising in the reflex centers of the spinal cord. An observation with the myograph of the phenomenon of a muscle contraction, will show a short period of repose just preceding the contraction. But if the nerve impulse be repeated, with sufficient frequency, a state of continuous, or tonic contraction can be produced, such as is witnessed in tetanus.

It has been already remarked that the anatomical changes present after death from this disease are congestion of the vessels of the spinal cord and medulla (not so marked, as a rule, as after strychnia poisoning), hemorrhages, with occasionally extensive extravasations of blood and serum, granular changes, centres of softening, all of which occur, probably, as the result of increased functioning of the reflex centres, and are found, also, after death from those drugs, which exalt the irritability of these centres. The tonic contraction of tetanus are then evidently the result of rapidly repeated nerve waves originating in the exalted irritability of the reflex centres of the medulla and cord. I submit there is no evidence of any direct action of the tetanus toxines upon the muscle fibres. The indication then is markedly for a spinal depressant. Chloral, the bromides and the preparations of opium serve an excellent purpose. The first two, though, are difficult of administration, and are apt to be cumulative, interfering with cerebration, and producing coma, in which is impossible to nourish the patient, as occurred in a case of my own. Opium in the form of morphine hypodermatically can be administered more easily and more accurately, yet interferes with secretion and excretion, decreasing the chance of nourishing the patient and locking up the bowels.

Physostigma or calabar bean seems to offer the most satisfac-

tory antidote to the tetanus poison. The extract has been most frequently used, but it is not the most desirable preparation of the drug. It contains both the alkaloids, calabarine and physostigmine or eserine. Calabarine causes convulsions, like strychnia. Physostigmine or eserine stimulates muscle fibres and depresses the nervous centres. The purpose, then, should be to eliminate the action of calabarine by using the other alkaloid, eserine. If this paper succeeds in nothing further than emphasizing this one fact, the writer will feel he has accomplished much. Pursuing the study of the physiological action further, we find that the principal effect of eserine is upon the reflex centres of the spinal cord and medulla. The posterior columns of the cord are first affected, the anterior later. The pulse is slowed. The respiration paralyzed by lethal doses. The muscle fibres, voluntary and involuntary, throughout the body are stimulated without any increase of working force. As the poison of tetanus is principally exhibited in irritating the reflex centres of the spinal cord and medulla, eserine, at least, partially meets the indication.

It is a strange fact that strychnia has been suggested as indicated to meet this symptom by so excellent authority as Prof. Valentine Mott, and, indeed, was used for this purpose by Dr. Edward Vandepoel, of New York, who recorded twelve cases so treated, eleven of which recovered. The doses of strychnia were $\frac{1}{16}$ to $\frac{1}{12}$ of a grain every two hours, until involuntary twitching of the muscles of the extremities was noticed, when the masseters would relax. It is to be remembered that while strychnia in small doses exalts the irritability of the reflex centers, if pushed, it depresses the same centres. But it is difficult for the writer to understand how, in the conditions present in tetanus, it would be possible to easily determine the appearance of muscular twitching as a result of the drug, and why the poisonous results of the drug did not appear, or why the convulsions were not emphasized instead of being controlled. Coming from such authority, the facts must be accepted, though unexplained.

In my experience, very much larger doses of physostigmine and eserine are necessary than is usually set down in the works on materia medica. My practice has been to begin with $\frac{1}{20}$ of a grain, hypodermatically, every four hours, and gradually but quickly increase the quantity to $\frac{1}{6}$ of a grain, or until the jaws are relaxed and the patient resting easily. This effect was procured in every case of my own in which the drug was used, the result being noticed not only by the medical staff of the hospital and the nurses, but also, in each instance, by the patient. In one case, seen recently in consultation, the most disappointing results followed administration of the drug. Instead of relieving the symptoms which were opisthotonus with very marked and rigid contractions of the abdominal muscles, while the jaws were comparatively relaxed, convulsions followed each administration of the eserine. Presuming that the sample of the drug used must contain calabarine, or other impurity, another sample was obtained, and again administered. Convulsions promptly followed, and, later, temporary paralysis of respiration, the heart continuing to beat and the patient reacting by aid of artificial respiration, to live forty-eight hours longer. In this case, the point of infection could not be more definitely located than was disclosed by a specific urethretis, which had recently existed.

The peculiar action of eserine, in this instance, was probably due to one or more of the following reasons:

(a.) An idiosyncrasy of the patient.

(b.) The presence of some impurity, which might have existed alike in both specimens of the drugs, as both were Merck's.

(c.) The well known facts that certain spinal depressants occasionally produce convulsions by paralyzing the inhibitory centers of the cord.

3. Long since the attention of the profession was directed to the necessity of removing all forms of external irritation, and of keeping the patient just as still and quiet as possible. A slight draught, a noise, a bright light, slight movement of the floor are sufficient to cause most violent tetanic contractions. It is

highly important to place the patient in a darkened room, where perfect quiet can be preserved. De Rienzi goes so far as to stuff the patient's ears with cotton. In young children this is very satisfactory addendum to the other treatment.

4. A large proportion of the deaths in tetanus are from inanition. Concentrated fluid food, peptonized milk, meat juice, beef and chicken broths, with whisky or brandy when indicated, in large quantities at regular intervals, should be given by the mouth, or if impossible to give these by the stomach, carefully prepared enemata will often bridge over an emergency.

Deviating from the usual order, a study of the prognosis in tetanus in this light will present the following thoughts:

The prognosis will be modified—

1. By the acuteness of the attack. Acute tetanus has always been, and still is, a most fatal disease. Classical authors of ten years ago declared that no well authenticated case of acute tetanus had ever recovered. On account of the difficulty of accurately defining precisely what is an acute case, I prefer not to go on record as to an opinion in this matter. But I believe that the present method of treatment furnishes more subacute and chronic cases, and consequently on the whole much more favorable statistics.

2. Good general health, an excellent constitution, a time of life when the vital forces are unimpaired by too few years or too many, and freedom from the effects or accompaniment of other disease, all exert the greatest influence in the question of ultimate result of treatment. Tetanus in a new born babe or in the very aged is necessarily more fatal, precisely as it would be expected in a woman who had suffered from excessive postpartum hemorrhage and died of the disease during the puerperium.

3. The prognosis will further depend on the possibility of removing the focus of infection. Where such focus is favorably situated, and can be thoroughly removed and the surrounding tissue disinfected, the production and absorption of the poison can be stopped. Where it can not be done, the outlook

is not so favorable. Recently I saw a case of tetanus in a baby ten days old from suppuration of the umbilical vein. The temperature range was from 104° to 105°. The child lived for seven days after I saw it, dying on the ninth day of the disease. Twice to three times daily the umbilicus was dressed with bichloride solution, each time a few drops of pus being squeezed out. The jaws relaxed under doses of $\frac{1}{40}$ of a grain of sulphate of eserine by the mouth so that the child nursed the bottle without difficulty. It died eventually of high temperature.

CASE I*—Woman; age, 25 years. Cause evidently a suspicious abortion. An offensive discharge from the uterus. The cervical canal was well dilated under chloroform, the uterine cavity thoroughly curetted, and douched with 1 to 2000 bichloride solution. Eserine sulphate, gr. 1-12 given hypodermatically, and dose gradually increased to 1-6th every four hours. Not much effect noticed until maximum dose was reached and morphia used occasionally in addition for first three days. Under gr. 1-6th eserine every four hours antiseptic douches, quiet and concentrated food, the patient recovered in a little over four weeks.

CASE II—Mrs. G———; white; age, 25 years. History of abortion a week before, with sore throat and stiffness of the jaws developing two days prior to admission. Jaws tightly contracted. Opisthotonus present. Offensive vaginal discharge. Temperature, 102; pulse, 120. Case treated precisely in same lines as No. 1. Discharged cured in six weeks.

In both these cases during the latter stages as the symptoms of the disease were disappearing, the usual dose of eserine (1-6 gr.) which had been borne every four hours for days before with no bad results, produced nausea, vomiting, purging, resembling mild cholera morbus. These symptoms disappeared without treatment, and were avoided in future cases by decreasing the dose of eserine as the tetanus improved.

CASE III—J. R.; female; black; age, 40 years. History of illness of three days, with convulsions on the day before admission. An old, deep, ugly ulcer of leg, with gangrenous edges. Suffering intense, jaws fixed, general muscular system tightly contracted. Pulse rapid and feeble; temperature ranging from 102 to 103. Patient was chloroformed; the ulcer thoroughly curetted, the edges being liberally cut away. The resulting wound was washed with 1 to 500 solution of bichloride, and dressed with a liberal supply of iodoform. She was then

*Full notes in N. O. Med. and Surg. Jour., Oct. 1890.

placed in a private room, given eserine sulphate, the dose quickly increased to gr. 1-6, and concentrated fluid food given. On account of the crowded condition of the hospital and the limited supply of trained nurses, it was impossible to procure a competent nurse for this patient. She was intrusted immediately to another negro woman, and was visited at regular intervals by the hospital interne and by the trained nurses. The case progressed very satisfactorily until about the ninth day after admission, when during the morning clinic she had a severe convulsion, which was relieved by chloroform and eserine. Upon investigation it was found that the usual dose of the last remedy had been omitted by mistake at the period preceding the convulsion. On the morning of the sixteenth day after admission one of the internes administered the usual dose of eserine at 12 midnight, and left the patient resting quietly, the sleepy negro woman in charge. The interne coming again at 4 a. m., found the patient dead upon the floor, near a window ten to twelve feet from the bed, the apology for a nurse absent. In this case had the eserine been given at shorter intervals, being pushed to fuller effect, and the patient properly nursed, it is a reasonable assumption that the result would have been different.

CASE IV—M. B.; female; white; age, 42 years; nurse. Sore throat and stiffness in neck and jaws beginning three days before admission, and rapidly extending. Body and legs covered with small abscesses from hypodermatic injections of morphia. A large abscess on calf of left leg. Patient had been using morphia hypodermatically for years, and then using a quantity averaging ten grains daily. Temperature, 101; pulse, 90. Chloroform was administered, every abscess opened and freely washed out with 1 to 500 bichloride solution, the irrigation being continued for twenty minutes, then each was dressed antiseptically, several of the larger being packed with cotton wet with the same solution. These different wounds were dressed antiseptically every second to third day and healed rapidly.

The sulphate of eserine was given subcutaneously in increasing doses until gr. 1-6 was reached, which was given every four hours for four days. Then the interval was decreased to every two hours. This dose was continued, the interval being sometimes two hours for days, then every three hours as symptoms were under better control, to be again every two hours when it became necessary.

The morphine was continued in grain doses hypodermatically six times daily. The pulses during the first few days grew slower, and later faster, running up to 110 and 120, always regular, though at times feeble. The respirations quickened and grew shallow, sometimes as many as sixty to the minute. The temperature ranged irregularly, frequently going below normal and then rising to 101 and 102. Digestion

good all the time. Bowels moving regularly. Patient's mental condition usually much depressed. Her room was kept darkened and quiet, and her diet carefully looked after. By the fourteenth day after admission she had begun to improve. The eserine was given at longer intervals, and the dose of morphine very gradually and carefully decreased. On the forty-ninth day the morphine was discontinued, and on the fifty-seventh day the last dose of eserine (gr. 1-12) was given, the patient making a complete recovery.

OPERATIVE TREATMENT IN TYPHOID PERFORATION OF THE INTESTINE.

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The case I shall relate is a typical example of a condition, which, up to a short time ago, was considered absolutely fatal, but now, thanks to the labors of some enthusiastic surgeons, has been placed in the catagory of justifiable operations.

On October 16th, I was asked by Dr. West to see a patient, in the Sealy hospital, who showed symptoms of general peritonitis. He was an engineer on a British ship; aged 36, and well nourished. His ship had been in Galveston for one week; had previously been cruising in the Mediterranean, where she had taken water at Gibraltar and Genoa. A period of four weeks had elapsed since her departure from Gibraltar.

The patient had been a little feverish and languid for some time, but had been able to attend to his work, and had eaten ship's ordinary meals up to the previous Wednesday. On that day he was seized with severe pain in his belly, followed, in a few minutes, by vomiting. This had caused him to take to his berth, where he had remained up to the time of his admission.

On examination (Sunday morning), I found the following condition: The face was somewhat flushed, but not haggard; temperature, 103° F.; pulse, 120, small and thready; respirations shallow, 25 to the minute. The abdomen was immensely distended; the enlargement being uniform. Percussion note revealed resonance all over, but there was no obliteration of the liver dullness. There was great tenderness all over, but examination failed to elicit any particularly tender spot. Pain was intense, and was referred to the umbilical region. Hiccough was troublesome, and there was repeated vomiting of bilious matter.

On analyzing the symptoms, I was somewhat at a loss to account for the peritonitis. There was no cæcal tenderness, and the history of previous illness was not at all definite. In fact, it was only proved to a certainty by questioning the captain, after the operation had given us the true diagnosis.

Recognizing that operative interference offered the only chance of recovery, at 3 p. m. (Sunday) I opened the abdomen by a long median incision, which had to be prolonged an inch above the umbilicus. A large quantity of sanious semi-purulent fluid was evacuated and coils of distended small intestine received into hot bi-chloride towels. On passing two fingers toward the cæcum, I opened a large collection of fluid, having in it flakes of lymph and solid faecal matter, the odor of which was most penetrating. The difficulty of making a complete examination with the intestines so distended, was insurmountable, so I punctured one of the distended coils with a large trochar and canula, removing about two quarts of semi-fluid faecal matter. By this procedure I succeeded in relieving the abdominal distension. The trochar opening was then closed with three Lembert's sutures, and I now proceeded to examine the intestine, inch by inch. Following the mesenteric attachment toward the right iliac fossa, the gut became more and more congested, and more thickly covered with flakes of lymph. Suddenly I came upon a perforation in the ileum, at a spot about one foot from the ileo-caecal valve. The perforation was oval in shape and was about one-fourth of an inch in length by one-eighth of an inch in breadth. The edges were clean cut, greyish in color, and surrounded by a zone of intense inflammation. The opening was cleaned and the gut above and below it compressed by the fingers of my assistant. I passed three interrupted sutures through the edges of the ulcer, and then united the serous surface of the gut by a continuous silk suture, which passed through serous and muscular coats. This procedure was excessively difficult, as the bowel wall was very brittle and unable to give good holding ground. As a further precaution, three or four interrupted sutures were passed to strengthen the

others. When the sutures were completed, the calibre of the intestine was so much diminished that it seemed impossible for the intestinal contents to pass. The abdominal cavity was then carefully and completely irrigated with hot boracic lotion, and a drainage tube inserted into Douglas' pouch. No other perforations were found, but at certain points on the wall of the gut the presence of inflamed and ulcerated Peyer's patches was distinctly observed. The mesenteric glands of the lower part of the ileum were also much enlarged and inflamed; some of them being as large as an almond.

The abdomen was now closed, and the patient, already much collapsed, taken to bed. Two injections of $\frac{1}{30}$ gr. of strychnia were necessary within a short time, and in two hours the patient had completely rallied from the operation. This improvement continued until midnight and it looked as if recovery might be hoped for, but suddenly the patient began to sink, and died at 2 a. m. on Monday.

The post mortem examination revealed the characteristic lesions of typhoid fever; the sutures, which had been inserted, were perfectly tight, and some plastic lymph had been poured out over them.

In reviewing this case I must confess that the diagnosis of typhoid fever hardly crossed my mind. The symptoms, of course, were compatible with such a cause, but the patient's answers to interrogations, as to previous illness, were, to me, unintelligible jargon. Later on, we were assured by the captain of the ship that the man had been complaining for at least two weeks before the peritonitis set in.

The quick onset of the pain, followed by almost instantaneous vomiting, led me to think that the primary cause might have been internal strangulation, and that the peritonitis was a secondary complication. There were, however, few points to sustain this opinion. Perforation of the vermiform appendix was considered, and, although he denied having had any pain in this region, our opinion was that, at the operation, we should find the original mischief there.

There is no absolutely definite symptom of perforation in which we can place absolute reliance. Of course, where we have a definite train of symptoms occurring in a patient who has long been under treatment for typhoid fever, we can come to a certain conclusion. Van Hook's first case is one of these. During the course of typhoid fever, at the end of the third week, an enema was given and the patient was suddenly taken with violent pain in the right iliac fossa, followed by collapse, quick, weak pulse, low temperature and vomiting; in short, with symptoms that admit of but one interpretation. Unfortunately we rarely find all these signs combined; they may come on late, or may appear in some rare case without perforation. [1]Great stress has been laid on the disappearance of liver dullness as a symptom of perforation. (Leube & Traube.) This is anything but an absolute sign, and was not present in our case. It is more likely to occur in perforation of gastric ulcers than in those of the ileum. Liver dullness may, on the other hand, disappear in consequence of a distended loop of bowel intervening between it and the abdominal wall.

Other symptoms *have been insisted on, such as (1) the impossibility of observing the peristaltic movements of the gut through the abdominal walls (Wagner) or (2) peculiar gurgling sounds, heard during inspiration, and proved to be bubbles of gas passing from the hole in the gut wall. (Levaschoff.)

Unfortunately, although occasionally these signs may be present, they are far from having an absolute value.

The points that necessarily arise in considering the question of operation are: (1) Is the operation justifiable? and, (2) if so, when ought it to be performed?

There is no doubt that spontaneous recoveries† have occurred after perforation, but these cases are so rare that they must be looked upon as clinical freaks, and not as an indication of nature's method of dealing with this complication. Death is

1 C. Louis, Progres Medical, December 27, 1890, page 512.
* C. Louis Loc. cit.
† Murchison Continued Fevers.

almost an invariable result within a few days, unless the extravasated faecal matter is removed from the peritoneal cavity.

Facing this almost inevitable result, no physician is justified in allowing a patient, who might recover by a prompt operation, to pass away without some attempt to rescue him from almost certain death. Of course, cases are encountered where collapse is so pronounced and death is so imminent, that to contemplate an operation would be madness, and would be tantamount to performing a post mortem examination on the operating table. Such cases must always be judged *per se*, and much must be left to the surgeon's common sense and experience.

*Judging from recorded cases of perforation, this accident never occurs within the first two weeks of the fever, but either at the height of the fever (end of the third week) or during the decline. It is, however, quite impossible, in many ambulatory cases, to fix the duration of the fever; but probably the same rule holds good. †Van Hook argues that the period of the fever exerts no influence on the question of operation; if perforation occur early, the patient's powers are probably great; if it occur late, then there is less fever to be sustained by the patient. I think, with Van Hook, that it matters little what stage of the fever we are dealing with; the condition of the patient is all that concerns us, and if the condition be good, we are morally bound to give him the only chance of recovery. That this chance is small, is shown by an analysis of the successful cases. In the hands of skilled surgeons, there have been only four recoveries out of seventeen operations; and, after a searching examination, probably three of these are spurious, leaving only one unequivocal recovery on record.

A glance at the following analysis of cases will show the status of the operation up to the present:

* Hoelcher Munch. Med. Wochenschrift, Jan., 1891, S. 43.
† Van Hook, Phila. Med. News, Nov. 21, 1891, p. 591.

Operator and Date	Reference	Number of Cases	Result
Mickulicz 1884	Contributed in the Fifty-seventh Assembly of German Physicians, held at Magdeborg. (Quoted by Louis.)	One case of typhoid. The diagnosis doubtful. A perforation sutured.	Recovered.
Lücke 1885 (Kussmaul's Clinic)	Deutsche Zeitschift fur Chirugie, Oct., 1885.	One case. The intestine was resected.	Death in eleven hours.
Escher 1886	Wien Med. Wochenschrift, 1887, s. 607.	One case. When operating for a scrotal hernia, he accidentally opened a sac full of fœtid fluid, which communicated with the abdominal cavity. Cavity washed out. Diagnosis doubtful.	Recovered.
Bartleet 1886	Quoted by S. K. Morton, Phila. Med. News, Nov. 26, 1887, page 617.	One case. Diagnosis doubtful. Opened abdomen and washed out a purulent collection.	Death on the second day.
Greig Smith 1886	Abdominal Surgery, 3rd ed., 1890, page 751.	One case. Diagnosis doubtful. Opened abdomen and washed out a purulent collection.	Death in four weeks.

OPERATOR AND DATE	REFERENCE	NUMBER OF CASES	RESULT
Bontecon 1887	Journal of the American Medical Association, 1888, page 106.	One case. Perforation in ileum sutured, and vermiform appendix resected.	Death in a few hours.
Morton 1887	Phila. Med. News, Dec. 24, 1887, page 730.	One case. A walking case of typhoid. Perforation in ileum sutured.	Death in six hours.
Bontecon 1889	Journal of the American Medical Association, 1890, vol. xiv, page 455.	One case. Perforation in ileum sutured.	Death on the following day.
Senn 1889	Medical News, June 8, 1888. (Quoted by Louis.)	One case. Volvulus and perforation. Resection of the bowel.	Death in ten hours.
Hahn Reported by Frank 1889	Beitrage zum Centrablatt f. Chirugie, 1889. (Quoted by Louis.)	Two cases.	Two deaths.
Kimura 1890	Lei. J. Kwai Medical Journal, Tokio, 1890, ix, pages 55–57; Brit. Medical Journal. 1880, vol. ii, page 777.	One case. The ileum sutured.	Death in nine and a half hours.

Operator and Date	Reference	Number of Cases	Result
Taylor 1891	Lancet, 1890, vol. i, page 961.	One case. Operated on ten days after onset of symptoms. Diagnosis somewhat doubtful.	Recovered.
Van Hook 1892	Phila. Med. News, vol. lix., page 591.	Three cases. Histories very complete. Perforation secured in successful case by three rows of Lembert's sutures. In one case patient nearly died on the table; operation not completed.	Two deaths; one recovery.

Van Hook's successful case is probably the only one that will bear close scrutiny. Taylor's case was operated on ten days after the perforation, and is not definitely proven to have been a case of genuine typhoid perforation.

Mickulicz was somewhat doubtful about the diagnosis of his case.

Escher's case is very incomplete. No perforation was discovered; the localized peritoneal effusion had no fæcal contents, and was reached when operating on a right sided strangulated scrotal hermia.

The method of operating requires but little consideration. The various steps of the operation, in my case, were easy, after I had relieved the distention by drawing off the bowel contents. It is not in every case, however, that one can draw off sufficient from a single puncture to accomplish this effect. It may be necessary to puncture four or five coils before enough room can be obtained to examine the parts thoroughly. Often the contents are not fluid enough to flow through a small canula; a larger one must then be used. Unless the canula be very large there is little danger of oozing from the puncture, but it is always safer to insert two or three Lembert's sutures.

The treatment of the ulcer, when found, requires some judgment. We have a choice of various procedures:

1. Simple suture.
2. Making an artificial anus.
3. Excision of a portion of gut.

In the majority of cases, simple suture will be found adequate. It may, however, fail from one or two reasons. The gut may be too brittle to hold stitches. Again, the ulcer may be so large that suturing it would constrict the bowel so much that intestinal contents could not possibly pass along.

Under such circumstances we should be forced either to bring the loop of bowel outside the abdominal wall and fix it there, or to adopt the risky alternative of excising the affected portion with end to end suture of the healthy gut. This procedure would be most dangerous in the face of a severe constitutional

condition. It was done in Lücke's case; the section showed necrosis at the line of suture; and Lücke, in his remarks, condemns excision, and advises the formation of an artificial anus. If the patient recover the artificial anus can then be treated on its own merits.

I would, in conclusion, lay some stress on the necessity of thoroughly cleansing the peritoneal cavity. It is necessary to remove all the extravasated contents, if a cure is to be expected. Irrigation may be accomplished with hot water, or with hot boracic lotion, and it is remarkable what a stimulant this is to the collapsed patient. The pulse increases in force, the respirations become deeper and more forcible, the color improves, and, at the end of the operation, the patient is often in a better condition than before.

Drainage is, of course, an absolute necessity. It may be accomplished in the male by a glass tube, inserted into Douglas' pouch; in the female, as Lücke suggests, by a counter opening through the vagina.

BONE EXCISION IN THE FOREARM.

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M'GREGOR.

Injuries of the bones of the forearm, producing loss of continuity of either bone, necessarily entails more or less loss of function.

It is often difficult to decide which is the better, excision or amputation. If the soft parts be much involved and any considerable length of bone has to be removed, an effort to save the limb involves a protracted and tedious treatment.

When both bones are injured to the extent of requiring resection of any considerable length of bone, the limb would be useless if saved. Therefore amputation would be the only rational recourse.

Even imperfect motion of the hand and arm subserves many useful purposes, and is susceptible of great improvement by practice.

Antisepsis here as in other branches of surgery is attended by a like superiority of results over the surgery of a few decades in the past. The statistics of excisions of the bones of the forearm have mainly been derived from military sources, and, as no great wars have been fought since the reign of antiseptic surgery, more or less difference in results must exist.

In Holmes' System of Surgery under "Gun-Shot Wounds," 986 instances of excisions in the forearm are referred to. Of these 856 recovered, 109 died, 21 undetermined. In nearly all these cases excision was limited to a few inches of the shaft of one of the bones. The average usefulness of the hand was unsatisfactory.

Two cases in which the border line between excision and amputation was very obscure, in which the former was chosen, have fallen under my observation during the past few years.

CASE I—G; male; age, 40 years. Had his left arm caught by a revolving vertical shaft; was spun around a number of times before the machinery could be stopped. The acromion process of the scapula, the humerus in the lower third, and the radius and ulna about the junction of the lower and middle thirds were fractured, the two first being simple fractures, the latter compound and comminuted. A piece of the radius an inch long was broken off and thrown out of the laceration in the arm while he was revolving around the shaft. The radial and ulna arteries pulsated very well, and there was sensation in the fingers and hand.

The patient had resolved to have the arm amputated, and sent for me for that purpose. I presented the case to him in the most hopeful light, compatible with the circumstances, and insisted that an effort be made to save the arm and hand; this he reluctantly agreed to.

I removed the broken ends of the radius up to solid bone, making the total amount removed something more than 2½ inches. The arm was incased in plaster, bringing the broken ends of the ulna in apposition, and leaving an opening so that the wound in the arm could be dressed. The other fractures were dressed in the usual manner.

Recovery was tedious, but in four or five months all discharge had ceased, and the wound healed nicely. The fingers had some motion, and there was very fair pronation and supination. Practice in these movements resulted in great improvement; so much so that, during the second year after the accident, he was able to resume work on the farm, with a hand not so dexterous as formerly, but withal very useful.

CASE II—W. F.; male; aged 21; accidently shot, the charge entering the ulna side of the right arm 2½ inches from the wrist, tearing away the the whole side of the arm up to a few inches of the elbow, playing havoc with the flexor profundis digitorum, and other muscles, severing the anterior interosseous artery, and breaking the ulna two inches from the wrist, and again five inches from the wrist. The intervening piece of bone was attached by a few shreds of ligament to the radius. The loose piece of bone, together with sufficient of both distal and proximal ends to reach solid bone, and the lacerated and useless portions of the muscles and skin were removed.

The injury was so extensive, so much of the surface being involved, that I thought best to defer the application of plaster and secure the best immobility possible by gauze, cotton batting and bandaging.

On the fourth day the doctor who was watching the case concluded, because a little blood had oozed through the dressing, notwithstanding there was no bad odor, it was necessary to remove the dressing. This he did, and continued to do so every day for a month. I was now

requested to see the patient again. I found the wrist in extreme extension, the hand being at an angle of 90° with the arm. Any effort to straighten the wrist produced most excruciating pain. Besides this he was taking a very liberal supply of morphine. I chloroformed him, straightened the wrist, applied a plaster bandage, cementing rubber protective to the skin all around the wound in such a way as to prevent burrowing of pus under the plaster, and to conduct it out through an opening in the plaster corresponding to the wound. This was followed by great relief to pain and a corresponding improvement in the wound. After ten days some portion of the rubber protective became detached from the skin, pus got under the plaster and its removal became necessary. I devised a board splint that served the purpose admirably. This splint is composed of two boards, with holes on either side at the ends to tie them together when in place. The one on the ulna side has an additional short board, ¾ inch thick, attached to each end, and of sufficient length to reach nearly to the edge of the wound on either end. The object of these short pieces is to raise the splint on the ulna side so that it will not press on the wound, the pressure being at the ends.

The splint enabled him to carry the arm suspended, and he has improved very satisfactorily. Four months after the accident the wound has healed entirely, except a small sinus near and communicating with the end of each bone in one of these sinuses, I found two small pieces of cast-off bone. There is union between the remaining parts of the ulna and radius; so the patient can use the arm in slight pronation and supination; can move the wrist, and nearly extend the elbow without producing any pain. I think in time he will have a fairly useful arm; however, I am fearful that, to a great extent, extension of the fingers will be lost.

Some writer has remarked that it often requires more surgical skill to save a limb than to amputate it. If this could be accepted as an axium no doubt many fairly useful arms would be saved that are now amputated.

REPORT OF A CASE OF INCISED WOUND OF ABDOMEN—REMOVAL OF ONE-THIRD OF GREATER OMENTUM—RECOVERY.

I. E. CLARK, M. D.,

SCHULENBERG.

One night, about 1 o'clock, I was called to see Jack Berse, a negro waiter at Railroad hotel, who had received a wound in the abdomen, in a drunken fight with one of his fellow waiters. On arrival, I found him placed on a bed, having been removed from a pile of shavings in the back yard. He was lying upon his back, with abdomen and right side covered with a large mass of protruding intestines and shavings. He was cold, pale and collapsed, begging some one to give him some poison so he could kill himself. I administered a hypodermic injection of morphine and atropine, and immediately began examination of the wound. Found an incision about five inches long, extending from about one inch to the right of the umbilicus to about two inches above and posteriorly to the crest of ilium. Through this opening the entire small intestine, with a portion of the large and omentum, had protruded. The whole was covered with a lot of shavings, which I attempted to remove, but found they had penetrated the omentum and partially through the intestines. The negro, after receiving the wound, ran and fell on a pile of shavings, and lay there rolling around for half an hour before being removed for at least two hours, with the assistance of Mr. Cartwright, manager of the hotel, and a negro man, I endeavored to remove the shavings and splinters from the intestines, but the omentum—one-third or more of the entire greater omentum—was so full of splinters, and being unable to remove them all, I proceeded to amputate that portion that was lacerated and contain-

ing splinters, which was at least one third of it. There was some bleeding, which I controlled by torsion. The patient was very fat, and I cut away several pieces of fat from the muscles, which were lacerated and full of splinters. I kept the intestines partially covered with two and one-half per cent solution of carbolized warm water, then cleaned the whole with the same solution. I now flooded the entire abdominal cavity with hot water, so that any loose splinters might be removed. After fully convincing myself that I had removed all shavings and extraneous particles of grit and dirt, using an aseptic sponge, dipped into a two and one-half per cent solution of hot carbolized water, the wound was closed by twelve interrupted sutures of carbolized silk, dusted over with iodoform, and dressed with iodoform and sublimate gauze.

On my visit next morning found him resting well, no fever, and pulse about normal; drew off urine with catheter, which I had to do for three days. On third day, having had no passage from bowel, I ordered a tablespoonful of castor oil repeated every three hours until a passage was produced. On fourth day, no passage, ordered half pint castor oil to be given at once, also an enema of sweet oil. Four hours afterwards patient had a copious stool. Afterwards he was allowed to eat anything he wanted. He was given no medicine except an occasional hypodermic of morphine when he was suffering pain.

On the eighth day he was allowed to walk around the house and yard, and on the nineteenth day after operation he was waiting in the hotel. The patient, three years after operation, is now well, and has never suffered any inconveniences from the loss of his omentum.

I report this case because I have never seen or read of a case where so much of the omentum had been removed. It also shows that portions of the peritoneum can be removed with perfect safety.

MOIST GANGRENE, WITH AMPUTATION OF ARM—RECOVERY.

JAMES D. OSBORN, M. D.,

CLEBURNE.

The reason that this little paper will occupy your time for a few minutes, is due to the fact that a case of the kind occurred in my practice quite recently, and the good results obtained by surgical science, prompts me to report the case—not for the purpose, so much, of instructing you, but to put on record every case of surgery that carries with it evidence of what can or may be accomplished by decided action.

Traumatic gangrene of the acute, spreading or moist kind is, you know, prone to arise, when a limb or portion of it is by injury rendered incapable of continued life. The death of the part may be due to immediate destruction of texture; to rupture of arteries, veins and nerves; to the pressure of bloody or inflammatory effusion, or very frequently to a combination of all these causes. It is essential for the production of spreading or moist gangrene that the tissue thus killed be retained in close apposition with the living. Then we have the commencement of the symptoms, slight swelling, dusky redness of the skin, with bluish lines, from coagulation of blood in the superficial veins. It spreads, as it were, by leaps and bounds, many inches in a few hours, and is soon followed by bloody phlyctenæ, and crepitation on pressure, caused by the gasses of decomposition. Severe constitutional symptoms are concomitant, high temperature, with decided and intense depression are its special characteristics, and in a very short time the patient may succumb from asthenia. Heart failure, brain disturbance, rapid respiration and a general defective action of all the vital functions make themselves very manifest. We know that here

we have to contend with a purely septic disease. The constitutional state is purely septicaemic, from the continuous absorption of poison from the part. We know that the injury is necessarily and invariably followed by a breach of surface, and the loose cellular tissue is the route by which its extension is propagated, and that the gangrene shows itself before the living tissue can be blocked off from the dead by the process of granulation. Under such circumstances there can be no hesitation as to the course to be pursued, and the treatment should be energetic, active, prompt.

Nature is unequal to the task of correcting or arresting the disease, and the offending cause must be removed, and every hour becomes an important factor. Statistics tell us that the success of the operation is not great, and depends upon the ability to cut wide of the disease. Encouragement is held out that the chances are not hopeless, and the surgeon is bound to give the patient the benefit of the doubt. The physician's art does not avail him, for no internal remedy is of value in checking the progress of gangrene.

These remarks will tend, I hope, to lead your mind to follow me in this interesting case.

On the 4th day of last November I was hastily called to see little Lula Douglass, who is a sprightly child of eight summers, who had just been turned loose from school, and was playing, when she fell from a fence four feet high, falling on her back, with her right arm twisted around under her back. Upon examination, found a compound fracture of ulna and radius, near their middle. The external wound or opening was quite small, not more than a quarter of an inch in diameter.

Under the influence of chloroform, complete reduction and perfect apposition of the bones were made, and the arm padded with carbolated cotton, lightly bandaged, and card-board splints applied. Reaction from anæsthesia being perfect, left her laughing and comfortable, with little idea of the terrible trouble in store for my patient or myself.

On the 5th of November called, about twenty-four hours after

the injury, and was terribly worried to find a little thumb looking bluish; complaining, however, of nothing; quite cheerful, having passed a comfortable day, and with a good appetite.

The sight of the discolored thumb at once aroused me to a sense of impending danger, and I immediately proceeded to undo the dressing, knowing that here there was a case, and a severe one, of moist gangrene; for the bluish streaks were extending nearly to the elbow.

In all its hideousness the disease stared me—the bluish discoloration, the crepitation and the small phlyctenæ. With a determination to fight it, hot lotions were ordered with a covering of absorbent cotton, to be freely used until the morning visit.

On morning of November 6, together with several respected confreres, we found no check in the progress of the disease, but on the contrary, the spreading had continued and the constitutional symptoms in all their severity had manifested themselves. The gangrene was now deeply marked to about two inches above the elbow, and the swelling and crepitation had already passed the shoulder point, and the bluish tint was already across the median line, and the neck and opposite side were swollen, hot, painful and very tender; the limb from the finger tips to elbow, cold, black and swollen, with great bullæ, filled with a stinking, putrefying fluid. Temperature, running riot to 105°, and the heat showing signs of weakening.

The question, now, with us was: Will amputation stay the septic intoxication? No perfect line of demarkation showing itself and the system so thoroughly saturated, and sympathizing—where to operate with any hope of success, was the important question.

It was at once the unanimous verdict that immediate amputation was a single chance for life, and could not possibly hasten the death of the little sufferer.

I at once proceeded to amputate, selecting as point of operation a dim line of partial demarkation about one inch above the darkest point of the black and dead tissue, already two inches

above the elbow, reasoning that the gangrene at that time was not in the muscular tissue as prominent as in the skin and loose cellular tissue. After the operation, which, by the way, was the old circular one, we loosed the tourniquet, and before tightening again and applying the ligatures, allowed the blood vessels an opportunity to freely empty their grumous looking contents. Every aseptic precaution was used, the stump freely irrigated and left open for quite awhile, and treated afterwards on the open plan, freely irrigating every three or four hours. I chose the circular method because I knew that we could more readily cleanse and handle the wound. The reaction from the anæsthetic this time was very bad, and during the next twenty-four hours it seemed that death would close the case for us very soon. In addition to our other troubles, the skin for an inch and a half on the stump grew dark and darker, and it seemed that the stump was going fast; but we hoped, as it did not appear on the muscular tissue, that it would be cast off. It finally died and was sloughed off, and the muscular tissue never at any time participated with it, and nature began asserting its power, and on the fifth day after the operation we could safely say that the child's life was saved. The swelling, dark bluish discoloration and general constitutional disturbance gradually gave way. The stomach resumed its function, and the recovery was from that on natural, and now the little girl is waiting for her arm to grow out, and in the meantime is cheerful, bright and actively engaged with her school exercises, having already learned to write nicely with her left hand. To me this was a most interesting case for very many reasons.

In the first place, at the time of the injury, the child was in perfect health, and at the time of the accident I could not detect sufficient destruction of tissue or disruption of veins or arteries to cause me to suspect such dire results.

In the second place, this intense septic intoxication must have been produced by the absorption of the products of putrefaction from some cloth in and near the seat of the injury. What that poison is, you all know as well as I do.

In the third place, the great rapidity of the disease, with the severe symptoms, left but slight hope for surgical interference to do any good.

In the fourth place, the great and wonderful recuperative power of nature in eliminating this poison from the system, after so complete a saturation, so wide a spread, in so short a time.

REPORT OF A CASE OF SPLENECTOMY.

J. F. Y. PAINE, M. D.,

GALVESTON.

My reasons for reporting this case are the uncertain state of knowledge concerning the part performed by the spleen in the economy, and even its minute anatomy—experiments upon animals to determine its funtions by removal having been entirely negative—the comparative infrequency of the operation, and the conflicting views regarding its results.

The operation has been more successful when performed on account of traumatic causes. Thus Nussbaum states that in twenty-six examples of complete extirpation for injury of the abdomen, implicating the spleen, sixteen were successful; and Ashhurst records twenty-one consecutive cases which terminated successfully. The result, however, has been less encouraging where removal has been resorted to on account of diseased states. Mr. Herbert Collier reports, in the London Lancet, February, 1882, twenty-nine splenectomies for diseased conditions since 1549; sixteen were for leucocythæmia, and all were fatal. Of the remaining thirteen cases, unassociated with leucocythæmia, eight recovered. Ashhurst furnishes forty-three cases of splenectomy for disease, obtained from various sources, thirty-one of which are known to have terminated fatally.

CASE—Mrs. H. L., of French parentage; aged twenty-five; married; clear family history; has had three children; always lived in Liberty county, this state, where malaria abounds, and has suffered from irregular attacks of malarial fever since childhood. Her health began to fail in June, 1890, attributed to frequently recurring and persistent attacks of fever. From that date to the time of coming under my observation, she represented that she had not experienced a comfortable day. A movable tumor was, at that period, discovered in the lower part of the abdomen, which slowly increased in size, and gave rise to

constant pain, that was at intervals excruciating. In September, 1892, after a severe and protracted spell of fever and suffering, the tumor became fixed in the left iliac region, and pyrexia, in some degree, was rarely absent from then until after the operation.

Patient was admitted to the gynecological service of the John Sealy hospital in November, 1892. She was wasted in health, anæmic, complained of constant pain in the region of the tumor, had no appetite, and suffered from depression of spirits; there was abnormal temperature, the variation ranging from 100° to 103° F. The temperature curves were not characterized by regularity or periodicity; on one day the highest point would be reached in the morning; on another, in the afternoon; and again, at some hour of the night. Quinine was freely employed, but without appreciable effect. The large boggy tumor occupying the left iliac region was immovable, and was diagnosed dislocated and adherent spleen. Tenderness on pressure, unremitting pain, constant febrile movement and disturbed nutrition excluded every ground to doubt that serious inflammatory action was in progress, and that the abnormal mass was responsible for the waning vitality of the suffering woman. The indications of treatment were equally clear. Her former professional attendants—skilled practitioners—had exhausted every therapeutic resource without benefit, leaving nothing to hope from drugs. Surgical intervention seemed to offer the only chance of relief, but the patient's condition forbade immediate operation, and the usual modes were, consequently, employed to improve her state. In spite of every effort to control them, fever and pain continued in modified degree, and sleep was interrupted. Despairing of accomplishing a more favorable condition, splenectomy was done January 14.

The Operation—Section of the abdominal wall was made along the linea alba, the incision being about four inches in extent. Hemorrhage from the parieties was free, but promptly controlled by hot sponges and pressure forceps. The peritoneum, closely adherent to the abdominal walls, was opened, and the omentum found firmly glued to the spleen. This was detached and revealed extensive adhesions between the displaced viscus and the surrounding parts. It was adherent to uterus, bladder, coils of intestines, sigmoid flexure, and transverse colon. Adhesions were separated with great care, ligaturing those requiring it to prevent bleeding, and the organ was lifted by its lower end out of the abdominal cavity. The most difficult and critical part of the procedure was the tying and liberation of extensive vascular adhesions between its upper border and the transverse colon, which, being divided, permitted it to be raised entirely out of the cavity. The pedicle, which consisted of the splenic vessels, was

now brought in view, and within access, was transfixed, double ligatured with strong braided silk and cut through. As an extra precaution against hemorrhage, which is held to be the greatest danger of this operation, a separate ligature was securely placed upon each vessel of the pedicle. The ligatures were cut short and the stump was dropped back into the abdomen. The peritoneal cavity was thoroughly douched with warm Thiersch's solution and mopped dry by means of sponges. The external wound was closed with interrupted sutures, dressed with antiseptic material, and the abdomen supported by a flannel roller, as after ovariatomy. No drainage was employed. It is needless to state that the strictest rules of asepsis and antisepsis wore followed throughout the proceedings. The after treatment was the same as after every other abdominal operation. It is interesting to note that a small opening was discovered in the capsule of the spleen, from which issued a serous-looking fluid, that probably had some connection with the peritoneal involvement and the constitutional symptoms. The spleen weighed about three pounds, and presented the gross appearance of altered structure. I regret that I am unable to report its exact pathological changes.

The patient bore the operation admirably, reacting promptly from the slight shock, suffering comparatively little from nausea, and complained scarcely more of pain than before the operation. Her progress, immediately after operation and during convalescence, was uneventful. She sat up in the ward at the end of the third week, and returned to her home at the conclusion of the fourth. Her temperature sank to 99.5° F. on the second day following operation, and never reached 100° F. afterward, maintaining the normal standard subsequent to the fifth day. The pulse, which varied between 115 and 120 beats per minute before, dropped to 90 on the second day succeeding the operation, and continued at the natural rate (70 to 80) after the sixth. Morphia, which was so urgently demanded, at intervals, for the relief of pain previous to operation, was not required after the second day following it. She slept better immediately after the operation, grew more cheerful and improved without interruption. Diet and functions were regulated as in other cases of a similar character.

As much has been written regarding the ultimate effects of splenectomy upon the general health, I have thought it would be interesting to review this patient's progress from the date of operation to the present time, and even to exhibit her in person. Absence of appliances for counting blood cells has prevented a critical microscopical examination of her blood, and,

as a consequence, the report which follows is based simply upon common sense and general appearances. To begin with, "faintness and persistent vomiting" did not follow the operation. There never was reason to suspect that "white blood cells were increased at the expense of the red." It has been impossible to detect the slightest "enlargement of lymphatic glands," or the "development of accessory splenic nodules in the great omentum." There has been no appreciable evidence of "hyperæmia of the medulla of the long bones." No noticeable "enlargement of the thyroid gland" has occurred. There has been no sign, whatever, of increased "anæmia." At no time has there been apparent, either, the slightest indication of compensatory development, or disturbance of the economy as a result of the operation. The patient has progressively improved in comfort, spirits, flesh, strength and appearance since her spleen was removed. Extremely pale and emaciated before the operation, she now has healthy color and is plump, having gained thirty-five pounds in weight, and boasts of being a happy and useful woman.

It is now four months since the operative procedure, and enjoying the opportunity to examine the patient in person, you must judge for yourselves whether her system has become adjusted to its new relations.

[NOTE—This case was present at the session of the Section on Surgery of the Texas State Medical Association, and was examined by the members of that body.]

DISCUSSION ON DR. J. F. Y. PAINE'S PAPER.

DR. CLAY JOHNSON asked if the blood had been examined before and after operation.

DR. PAINE said not, on account of having no accurate means of counting blood cells.

DR. OSBORN asked if Dr. Paine considered his operation a dernier resort; in other words, was it his prognosis that without operation the patient must have died?

DR. PAINE answered that the operation seemed to him to be indispensable, and to give the patient the best chance of recovery.

DR. SHEARER, of Wallisville, said he saw the case before it came to Galveston. It fell into his hands two years ago. He treated it for some time and pronounced it floating spleen, or kidney. It was so connected with the uterus that it was impossible to separate the two. The patient said the tumor moved about. On one occasion, when he called, it occupied the right hypochondriac region. He tried chronic malarial treatment, giving arsenic, quinine and iron. Neuralgic pains were often present. He finally concluded operation would be necessary. The case had passed through the hands of four or five physicians, so it passed out of his hands for operation.

DR. SEARS said he had never seen a case where he thought it was necessary to operate for enlarged spleen. He never met with a case that would not yield to proper remedies. Ergot, hyposulphite of soda and a stomachic tonic, with iodine over the spleen, always produced a cure. He thought Dr. Paine's case would have got well without operation, but suggested that it was a good opportunity to show students how to operate.

DR. PAINE said the case was not malarial, as it was not affected at all by quinine. The perforations in the capsule showed it was of a different nature. As to performing operations for the instruction of students, Dr. Paine declared, with manifest feeling, that he had never performed operations except from motives of humanity.

DR. HADRA objected to the question put by Dr. Osborn, as it implied that we must never operate except to save life. To avert continued suffering justified operation, as well as to save life. He was surprised that anyone should question the propriety of operating in the case in question.

SECTION ON MEDICAL JURISPRUDENCE, ETC.

HYPNOTISM.

MATTHEW M. SMITH, B. Sc., A. M., M. D.,

AUSTIN.

MR. PRESIDENT AND GENTLEMEN OF THE STATE MEDICAL ASSOCIATION: It is with much hesitancy that I have concluded to present the subject of hypnotism for your discussion, and my reasons for it are manifold. In the first place, my inability to present the subject in that scientific light which your association would merit; for, as you know, it transports us from the physiological state of man into the very presence of mind itself.

Again, while I claim no usual amount of bravery, still it requires considerable courage for a young physician to present for your consideration a question that has always been clothed in the garb of charlatanry, and for that reason kept in mystery for the furtherance of its illegitimate uses. But thanks for the work done by many of our best scientific investigators, for by their efforts a ray of scientific light has been permitted to enter this mysterious household and cause the sneaking charlatan and common quack to steal from its threshhold and seek other fields in which to practice fraud and deception, in the form of bi-chloride of gold cranks, syphilitic specialists, impotency doctors, epileptic eradicators, and tansy pill sisters.

Just here, gentlemen, I wish to say, that if we, as scientific and educated physicians, will compel all these nostrum vendors and traveling quacks to stand under the light of scientific investigation, we will cause their self condemnation or else make them sneak away into darkness, where they delight, and usually

dwell, in order to deceive and rob successfully. It is by this means that we can gradually educate the people up to our standard of medical ethics, and thereby make it a benefit to both them and ourselves, and in this way we get by education what we have tried to get for years, by legislation. Just such motives as these in mind caused me to write upon this subject. So that by bringing it before you and discussing it with you we might the better understand this great question and see its true value in the therapeutic world.

Hypnotism has been studied during the past few years by many of our best thinkers and scientific investigators of Germany, France, England and America, and they have succeeded in placing it upon a thoroughly scientific footing, and, as many of our best physicians and neurologists make use of it in their daily practice, I think it is high time that we, as physicians, should at least acquaint ourselves somewhat with its manifestations and learn something of its therapeutic value.

I do not claim hypnotism to be a panacea; neither do I pose as an enthusiast, but this much I do know, that before I gave the subject much study I believed it a fraud and without a legitimate use, or even existence. I now believe it can be made to play an important part in the healing of the sick.

Hypnotism, we might say, is as old as the world. We can find evidences of its manifestations in the various stages. It was used in the service of mysticism, prognostication and religion, by priests of ancient Europe, by old Indian fakirs, Greek oracles, Roman sibyls and the mediæval magicians. But with the establishment of Christianity disappeared its devine origin, and it was then thought to be the workings of the devil, as evidenced by the execution of the witches in the middle ages, who were able to easily get under the influence of hypnotism.

It was at one time called mesmerism; at another, animal magnetism; again, electro-biology, and now—hypnotism. But all are but manifestations of the same thing, regardless of the name.

Hypnotism was first brought prominently before the people

by Fredrich Mesmer, in 1776, a physician of high standing, who, after much experience with it, finally located in Paris and established a baquet, or place of treatment, to which large numbers flocked, and sitting in this darkened room with joined hands, listening to strains of sweet music, surrounded by an atmosphere of mystery, many would feel its effects and be benefited by suggestion made at the time.

James Braid, of Manchester, the English surgeon, published, in 1842, a work entitled "Neurypnology," which succeeded in removing animal magnetism from obscurity, and brought it into a more scientific light. He investigated the subject in a scientific manner, and did much toward its solution and advancement. But it remained for Prof. Charcot, the eminent neurologist, of La Salpêtriére, in Paris, to admit and establish hypnotism upon a purely scientific basis, by publishing his observations and experiments from time to time. He studied the subject largely from its physiological standpoint, and as manifested in those diseased. At about the same time the Nancy school of investigators, with such men as Bernheim, Lièbault, Beaunis and others at its head. Studied the subject from its psychological side, and showed its practical value as a medical and educational agent, and its importance in medical jurisprudence. They, with Prof. Charcot, established it as a science. Lièbault, of Nancy, pointed out its value in the treatment of disease, also as an educational and moral agent, and has used it constantly, for the last twenty years, in his practice. Many are the renowned scientists that have contributed to its literature. In 1886 a journal devoted to hypnotism was published in France, and of late years many works have been written, setting forth the measure in its true light.

Hypnotism is the science of the sleep-like state, which manifests itself by various physical and psychical phenomena, and is induced in those susceptible, by some special influence exerted through the mind by suggestion. Hypnotic sleep does not differ materially from natural sleep, and is in reality but an artificial and modified form of sleep. It is induced by keeping

the idea prominently before the mind that sleep is coming on, which is done by means of suggestion alone or in conjunction with the fixation of the eyes upon an object, by stroking, pressure, etc., which only cause fatigue and assist suggestion—the all important element. There are various methods used in producing hypnotism, but they all employ the two great principles, the fixation of attention and the influencing by suggestion. I shall mention very briefly the two most common methods employed, Braid's and that of the Nancy school.

Braid caused the patient to be seated and had him gaze steadily at a bright object fixed very near and just above the eyes, thereby causing the eyes to be turned inward and upward, which position soon caused fatigue. After a few minutes the suggestion is made that the eyes are becoming heavy, that he feels stupid and sleepy, and by deepening the idea that sleep is coming on by means of suggestion every few seconds, you soon notice sleep really appearing, and then you command: "You are asleep, and can not open your eyes!" and you find such to be the case. Now, by deepening the hypnotic state by suggestion, you may experiment ad libitum.

In the Nancy method the patient sits opposite the experimenter and is told to think he will soon go to sleep and to think of nothing else. After a few minutes he is told his eyes are closing, he is fatigued, his eyes quiver more and more, he feels tired, his arms and legs are becoming heavy and tired, he is now sleepy, he is passing into a quiet sleep, and—he is sound asleep. (Command.) The time required for all this varies with the subject, from one to fifteen minutes, usually, but those who have been frequently hypnotized may go under it very rapidly, and even at once, by a command.

The dehypnotizing or awaking from the hypnotic sleep is very easily done. The best way is by suggestion. Make the command: "You have been asleep long enough; wake up; open your eyes; you are awake." Or again, you may allow them to remain quiet and awake as from natural sleep. The symptoms of hypnotism are very characteristic and varied, depending on

the state of hypnosis, whether it is slight or deep, the mental conditions of the patient and the ability and experience of the hypnotizer. Between natural sleep and profound hypnotism, there is an unbroken chain of intermediate states, as evidenced both physically and psychically. The effects of hypnotism are shown more or less upon all the organs of man. Not only are the motor and sensory systems affected, but likewise the brain and its functions, and even the respiration, circulation, nutrition, etc. But the most remarkable and important effects are shown to be in the mental state.

Physical Effects—The muscular system shows a striking sensitiveness to hypnotic influence, varying, of course, with the state. There may be relaxation, extreme irritability, disposition to contractions, spasms, tetanus, etc. For example, in the lethargic state, there is general muscular relaxation and the body is limber, resembling collapse, or, in the cataleptic state, there is a peculiar rigidity which holds the limbs and body in any position you place them, with abnormal endurance. You may have a tetanized condition of the entire muscular system, and suspend the subject upon the backs of two chairs, with only the heels and head touching, and he can remain for some time in this position with little evidence of fatigue. This state you often see abused in side show and dime museum exhibitions.

In all stages of hypnosis, except the very slightest, you have insensibility to pain, from pricking, burning and such means. In the lethargic state all senses are inactive, except hearing, which may be diminished. In the cataleptic state the senses are a little more active, and ideas can be imparted by them in a crude form. In the somnambulistic state everything is caused and varied by suggestion of the experimenter. Charcot divided the hypnotic state into three stages: Cataleptic, lethargic and somnambulistic. I shall briefly mention the characteristics of each.

Cataleptic State—Immobility is the most characteristic symptom, eyes are open, tendon reflexes abolished, complete insen-

sibility to pain, statue like attitude, limbs retain difficult positions without evidences of fatigue, vision and hearing active enough to be slightly influenced by suggestion.

Lethargic State—In its beginning may show epileptic symptoms, as rigidity, foaming of mouth, etc. There is complete insensibility of skin and mucous membranes, increased irritability of motor nerves, insusceptibility to suggestions or imparted hallucinations, eyes wholly or partly closed, usually trembling of lids, respirations deep and quickened.

Somnambulistic State—The one most interesting psycologically—the magnetic sleep—the eyes partly or wholly closed, some insensibility to pain, muscular irritability normal; but the senses quickened to a high degree, mental faculties highly sharpened, answers questions when asked. This is the state where suggestion has full sway and makes the subject act at the will of the commander, yet with it he displays a certain independence or personality.

It is in this state that we have the psychical effects of hypnotism, and they are the most varied and remarkable, often appearing mysterious and incomprehensible, which accounts for the long use made of them by charlatans as superhuman manifestations. These phenomena are all produced by suggestion given in some form.

I shall not discuss the symptoms of the somnambulistic state further under this head, but they will be brought out in discussing suggestion—the all important element in hypnotism.

Suggestion may produce phenomena that often seem incredible, and even miraculous. A suggestion to the hypnotized is but a dream, produced and directed by the experimenter. The same principle was admirably shown, in natural sleep, by Maury's experiments upon himself. He had a person to remain near him in the evenings, and as soon as he fell asleep to excite certain sensations in him and awake him after time for dreams. Cologne to his nose, caused him to dream of a perfumer's, where he frequently visited; the nape of his neck was gently pinched, and he dreamed of a blister there, and the physician who treated him in childhood by that method.

Suggestion is purely a psychical influence, and as the roads to the centres of ideas and imagination are many, we have, therefore, several kinds of suggestion; but the best, most effective and direct manner is by spoken words. The somnambulist is told something is so and so; that he is seeing, hearing, or feeling this or that; that he will do a certain thing, and you find he believes, sees, hears, feels and does just as told. Yet you find the subject is more than a nonenty; he possesses a personality, an ego, which acts to a certain extent. Suggestions are usually executed at once, but if they be things to which the subject objects to doing when in the wakeful state, he will hesitate, and even refuse to proceed, and if he does, devises excuses for his peculiar action. A devout Catholic will not violate his creed. You see the same thing in other states. The delirious patient may talk unconsciously of anything in his daily life except his vows of Freemasonry, which he keeps a secret even after being questioned about them. Suggestion introduces, cultivates and confirms an idea in the mind of the subject. This idea forms an image, and this image produces a sensation, and the subject accepts and believes it, thinking it original with himself, and acts accordingly. Command the arm to be stiff, and it becomes so. You can make him drink the most nauseous draught, and think it champagne; smell strong ammonia, and believe it perfume; blisters can be raised with postage stamps; cold iron made to burn, and even cause a sore. Tell him to listen to the band of music, and he is delighted; to taste castor oil, and he frowns; to see the picture of a relative on a blank card, and it is so; that he is nauseated, and he gags. I could enumerate at great length these strange phenomena, but time will not allow. With each hallucination produced by suggestion, appears all its accompanying elements and surroundings, and this panoramic scene may be changed as rapidly as in our dreams. For you know men have lived over years of their life in dreams of ten minutes. In sleep, the faces and voices of the departed are seen and heard years after we have forgotten their individual characteristics in the wakeful state. Post-hyp-

notic suggestion is where we suggest to the hypnotized that they will perform an act at a specified time in the future when awake, and nothing more is thought of it until the suggested time has arrived, when the idea suddenly appears, and he acts upon it as original, and often thinks it strange why he should do such peculiar things, yet he cannot help it.

Who can be hypnotized? You might say most anyone, if they give their consent freely and you repeat your attempts, i. e., those that have minds and can concentrate their attention. Hence, very young children, idiots and the insane can not be hypnotized. Sex and nativity make very little difference. The hysterical, as a rule, are easy subjects to be hypnotized, because they are very credulous, and their minds, when fixed by suggestion, do not wander or doubt.

The state of consciousness in the hypnotic state is more or less abolished in the cataleptic and lethargic states. But in all forms of the somnambulistic state, except the deepest, there seems to be a peculiar duplication of consciousness into a judging primary consciousness on the one hand, and an experiencing and acting consciousness on the other. We often see this clearly demonstrated in our dreams. The judging or primary consciousness tells us we are only dreaming, and to take no notice of the impressions made, but the secondary one accepts, participates, and is affected by what it believes to be real phenomena. Often in hypnosis the same thing is seen. The subject knows he is acting in a ridiculous manner, and is the object of experiment, yet he does things much to his displeasure and contrary to his wishes. With the deepening of the hypnotic state, the primary or judging consciousness gradually disappears, until it can not be recalled except by suggestion given during hypnosis, to the effect that on awaking what has occurred during the hypnotic state can be recalled.

Many people are able to listen to a conversation and read intelligently. We have speakers that are making a set speech and a question is asked and they continue with their speech and reason out a reply at the same time; or while listening to

one question they think up an answer to another. Richet advances the hypothesis of an unconscious ego, which gives attention, perceives, reflects and reasons unknown to the conscious self.

In diseased states we have records of patients that have lost all consciousness of their past life and have to learn again by experience and require a new education, and have no knowledge of their former selves; and after months, or years, they have been known to return to their former state, and forget every thing they acquired in the latter. Friends made in one state were strangers in the other. If educated as a fine musician in the one, could not play a note in the other. A devout Christian in the one and a wicked sinner in the other.

Dessoir believes many things are done unconsciously that are of mental origin. Beckworth could add up rows of figures and converse at the same time. Voltaire wrote poetry in his sleep. Mathematicians have solved the most difficult problems in their dreams.

The hypnotic state should not be considered as being mysterious or superhuman, but only as manifestations of what we all daily employ in a less degree. It can be largely explained by what is seen ordinarily in the wakeful state, and in our normal sleep and dreaming states. It is true that we can not at present fully and satisfactorily explain all the phenomena seen in the deeper hypnotic states. But we must remember all sciences are making advances and have many things unexplained. When we reason concerning the mind and its manifestations we enter upon a task wrought with many difficulties.

The anæsthesia and analgesia seen in the hypnotic state are often present in the wakeful state. The interested student may not feel the prick of a pin. The aching tooth is relieved by directing the attention elsewhere. Surgeons may perform minor operations in surgery with little pain if the thoughts are fixed upon something else. Marching does not tire half so much when music engages our attention. The hunter is not fatigued because his attention is fixed upon game. Soldiers in battle may not feel the most painful and serious wounds.

Hallucinations in hypnosis have their counterpart in the normal state, and they are caused in this way: We have an idea produced by some means; this produces an image, though it may be false, yet we may think it real, and as a result we have all the accompanying phenomena to appear and confirm the erroneous belief. We look for, expect and often find that which we imagine, although it is not present. This explains the false deductions at times made by our most thorough and painstaking scientists. Chalk will produce sleep if the patient believes it to be morphine. Bread pills have caused copious discharges. We expect sleep at a certain hour, and at that time feel drowsy.

Hypnotic suggestion is only arousing an image by word or gesture in the mind of the hypnotized, and this image does the rest. Just as we act upon an idea in our every day life. The suggested idea acts more quickly and with less reason, because the attention is concentrated and there is a clear field for action.

Normally the idea of an act tends to produce it. We can think pain into a particular locality. Thinking intently of words often causes their unconscious utterance. Delicate instruments have shown unconscious movements of the finger from thoughts. Whispering near a sleeper often causes him to dream in the same channel.

Post-hypnotic suggestion has its prototype in natural sleep. We are able to wake at an unusual hour to catch a train. Mothers wake at regular hours to give medicine to their children. In sleep we do not hear the passing of a milk wagon, the striking of a clock or the blowing of a whistle, yet we at once hear the report of a pistol, the sound of a fire alarm or the step of a burglar. You agree to visit a patient at a certain hour and you think no more about it until about that time; when the idea suddenly appears to notify you. I might continue and enumerate many ordinary states that are but a modified hypnotic condition, but time will not permit.

Some tell us the hypnotic state is only an assumed condition; but if you had seen subjects under its influence, you would

say it requires a mind of a Shakespeare and the acting of a Booth to simulate so rapidly, and perfectly. You can make the subject smell strong ammonia and believe it cologne; receive the electric brush without pain. Any one familiar with its symptoms can detect fraud at once.

Owing to the two-sided condition of man's brain and cord as shown anatomically and physiologically, we are able to have unilateral hypnotism, *i. e.*, affect only one side of man or even isolate more and act upon a single centre and cause it to respond without interference with the other. How valuable this must be to the scientific physiologist and psychologist.

The hypnotized, as a rule, only act upon the suggestions of the hypnotizer, and others that direct them are not noticed. This is called rapport, and is explained in this way: The attention is fixed and focalized by the suggestions of the hypnotizer, and those given by others fall without this focus of consciousness and have no effect. Owing to a lack of knowledge, the mystery and depth of this subject, I have spoken more at length concerning its history and phenomena than I otherwise should have done. I shall be compelled to hasten over its more practical uses as a medico-legal question and asatherapeutic agent.

Criminal uses may be made of hypnotism, and theft, robbery, rape, and even murder, may be committed through its influence. You may suggest to a patient that he owes you money, make him believe it, and give you a note for the same; may cause wills to be drawn up in favor of yourself or friends; have bank checks signed that are made out in your favor; have crimes acknowledged that are not committed; give testimony contrary to the facts in the case, and may even make them commit murder, as illustrated by causing a friend to be shot with a blank cartridge and a relative stabbed with a paper dagger. Crimical suggestions have a much more powerful influence upon those inclined to evil ways than upon the morally courageous. I doubt whether an upright citizen could be made commit a punishable crime.

Only graduates of medicine should be permitted to use this

important agent, and, then, be confined to its legitimate uses in the treatment of disease. We should no more allow traveling charlatans to exhibit its peculiar effects before the public than we would permit them to illustrate the effects of morphine, chloroform and strychnine by placing individuals under their influence.

I only mention a few of the legal questions that might arise from the use of hypnotism. A study of the subject will show that crime may have this for its cause as well as insanity, and in some countries they have, at present, laws to regulate its use.

Hypnotism as a Remedial Agent—Suggestion plays a very important part in normal life. It is the great principle made use of in the teaching of children. The influence that men exert over one another for good or evil. We must acknowledge, and make use of, the great influence mind has over body; for, as Alexander Bain says: "The stare of astonishment, the quivering of fear, the frown of anger, all indicate the connection of body and mind. The martyr, the saint, the blessed Virgin and Savior Himself manifest their nature by movements of the framework."

We have no imaginary diseases; but diseases due to the imagination, and accompanied by real functional disturbances. They are developed under the influence of spontaneous suggestion, and can be cured by the same suggestion, acting in a contrary direction. If exhausted from exercise of the body, the mind does not work clearly. Sudden outbursts of anger upset digestion. Prolonged mental labor brings on disease of the body. I briefly mention these facts to show you the value of considering the mind in the treatment of disease. Station men along the route of a susceptible individual; let them, in turn, refer to his sickly appearance, and the strong, healthy man may be made to take his bed. Make a patient think he is better, and you notice an improvement. A belief in a particular medicine aids in its benefits. The use of asafœtida for infection, the buckeye for piles, and metalic rings for rheumatism may be explained in this way. A large part of the homœopathists' success is due to mind influence.

Hypnotism should be used as judiciously as any of our drugs and only in cases indicated. Use it in conjunction with other treatment when deemed advisable, and before awaking the patient suggest there will be no evil after effects. Many physicians have used it for years without evil results and with remarkable benefits.

Conditions that are cured or benefitted by hypnotism: All pains that have no anatomical lesion as headaches, ovarian, rheumatic and neuralgic pains. Sleeplessness and hysterical conditions and many disturbances of menstruation, alcohol, opium and tobacco habits may be cured by its use. Neurasthenia, stammering, and nervous disorders of sight are benefitted by it. It may be used in minor surgery and labor to diminish pain. In treatment many sittings many be necessary in order to get the beneficial results desired. Some physicians will have much better success than others with its use; just as some surgeons have a more skilful use of the knife.

Experience, tact, the ability to judge human nature and psychological knowledge, all aid in our success. With many your first attempts fail, but with repetition, the susceptibility to hypnotic influence is largely increased and success may later attend our efforts.

In conclusion, gentlemen, I wish to say, that when mental impressions are fully understood in the cause and cure of disease, psychology will be found as important as physiology and will then be given a place in our medical colleges. We will all see the day when hypnotism will be considered much more valuable as a theraputic agent than many of the drugs lauded in our medical journals at the present time.

I have been largely assisted in the preparation of this paper by Drs. Moll and Bjornstrom's works on hypnotism. Binet and Fere's "Animal Magnetism," and by Prof. Leferre's article on hypnotism.

SECTION ON STATE MEDICINE, ETC.

PRACTICAL METHODS OF SEWAGE DISPOSAL.

REPORT OF CHAIRMAN, C. M. ROSSER, M. D.,

DALLAS.

MR. PRESIDENT AND GENTLEMEN: For the reason that it would be impossible, in the brief space of this paper, to do more than indulge in vague generalities, should I attempt to cover the entire field within the scope of this section, and because gentlemen who will kindly contribute to its work will supply largely what is lacking, I shall forego the labor of a "report," and content myself with the considerations of some practical methods for the disposition of sewage.

The term sewage embraces the various refuse materials which accumulate in all communities, and, if not promptly removed, offend by their presence, and on account of noxious gasses which emanate therefrom, and specific germs which thrive therein, become prejudicial to public health, the one by gradually producing a depraved state of bodily nutrition, and the other, by propagating their kind.

These materials include waste waters from dwellings, shops, manufactories, slaughter houses, packeries and the like, together with excrementitious products from the human body, fæces and urine.

Organic vegetable matters undergo rapid putrifaction, and if not early removed, give rise to disagreeable and unwholesome odors; and on account of the great danger attending the contamination of drinking water by them, the management of excrementitious substances is of the first importance.

Dr. Emmerich, of Munich, is said to have evidenced his disbelief in the theory of such contamination by drinking freely of water, both physically and chemically unclean, for a period of weeks, and his observation led him to conclude that products of vegetable and animal decomposition, when taken with drinking water, are not always harmful, but when water containing impurities, or water seemingly pure, happens to be contaminated by sewerage containing pathogenic germs, such as those of cholera, diptheria, typhoid, scarlet, yellow, and perhaps malarial fever, the consumer would probably contract such disease.

Instances cited by reports from the various boards of health fully confirm the opinion that perhaps the majority of outbreaks of typhoid fever are due to direct contamination. The epidemic of Caterham and Red Hill, in 1879, presenting 352 cases in six weeks; the epidemic of Over Darwen, with its 10 per cent of population, in 1874; that among the students of Cambridge university; that of Plymouth, in 1885, with its 1100 victims, leaves little room for doubt, and the observations of practitioners everywhere, who have studied causes, have reduced theory to a practical fact, which once established as to typhoid fever, of course determines the question as to cholera and other specific diseases.

Thus it appears that from the beginning to the final disposal of sewage, great care should be exercised in reference to the handling of human excreta.

Various systems are employed, having for their object the removal of sewage in a sanitary manner, and a proper selection depends upon the size of the city, the agricultural needs of the country, denseness of suburban population and the proximity of the city to running streams, or to some large body of water. A city situated near a stream, and capable of an abundant supply of water for the purpose of flushing closets, house drains and gutters, should be provided with the "water carriage system" of sewage.

The combined and separate systems differ only in that the "combined" system conducts not only excreta, but also

kitchen slops, waste water from bath tubs and manufacturing establishments, as well as storm waters from the streets, within the same conduit, while the "separate" system provides for storm water by either underground or surface drains, not connected with sanitary sewers, which only discharge from water closets, house wastes, etc. The "separate" system employs pipes of small calibre, capable of continuous flow and perfect flushing, preventing stagnation, with its attendant decomposition and the formation of pernicious gasses.

The "separate" system, after a practical test of a dozen years in Memphis and other cities, is in the best repute among sanitarians of the highest authority.

There are, however, many communities in which a system of sewage is impracticable, and those which are provided must, on account of topographical and financial difficulties, need to provide for certain portions of the city which have not been connected with the system. Until water runs up hill higher than its source, and until the poor, whom we, so far, have always with us, become less poor, the necessity for individual provisions and a means of final disposal will exist. The most pernicious of all systems employed is the "privy well system," which, on account of the fact that, reaching, as it does, a subterranean water flow, the contents become dissolved and pass out, rendering the contrivance exceedingly economical and popular among those who are selfish enough to profit by jeopardizing the lives of themselves and others.

The common privy vault so much used is only less objectionable from the fact that, being shallow, its contents are less liable to escape into adjacent wells; but even these are not without their dangers, and for the best of reasons each of these receptacles should be denominated "cesspools," and declared a nuisance.

My esteemed friend, Dr. J. T. Wilson, of Sherman, recently called my attention to a closet device which has impressed me favorably. Its arrangement is such that it can be constructed in a dwelling as closets or within sewer districts. The seat is sit-

uated over an opening in the receptacle, with a spring trap which closes the aperture when not in use, and prevents the backward escape of gasses into the house. When desired for use, the weight of the occupant upon the seat removes the trap, which springs into place again when the occupant rises. The receptacle is of hollow tiling, twenty or thirty inches in diameter and ten or fifteen feet long, supplied with vent pipe which conveys the gasses above the housetop, and another through which the contents may be pumped out inoffensively when desired. The closet would seem to fulfill the several requirements, viz., safety, comfort and convenience.

In the absence of sewer privilege and some such method as above described, the "dry closet system," for families, and the so-called "Smead" system for schools, factories, public buildings, and the like, are best. If dry closets are not adopted, and vaults must be allowed, certainly each should be carefully walled and cemented; made absolutely water tight and capable of endurance for years.

It matters not which system be employed, the question of final disposal remains the same.

Fire is the great destroyer and purifier, and where no sewer system is practicable, a modern crematory will be found indispensable. Various improvements have been made on furnaces, and patents have been issued on principles differing in their application, and several of them have been demonstrated to be able to consume all forms of filth which accumulated in communities.

At a time, when city health officer of Dallas, the small crematory, which had recently been remodeled to conform to the Busbee patent, was put to a practical test as to its capacity for the destruction of both garbage and night soil. Garbage, being composed of highly combustible matter, such as vegetable matter, street cleanings and dead animals, was cremated at a nominal cost; but we found the cremation of privy accumulations to be possible only at large expense.

After frequent conferences with Chief Sanitary Officer Busbee,

a man of mechanical information and skill, and an officer of a dozen years' service in the health department of the city, we decided upon a method by which the sewer system—although reaching by direct communication only a limited portion of the dwellings—could be utilized for the final disposal of all excrement, the same as if each house was connected with the system.

The plan was adopted by the Dallas city council, and, after the fashion of the first crude idea, has been operated for about two years, diluting, disintegrating, and finally disposing of the entire mass of privy accumulations of the city at the small expense of $1.50 per day.

We have now proposed improvements, which will likely be added in a short time, after which, excreta can not only be diluted and disintegrated, but perfectly sterilized by the use of steam.

A point is selected a few hundred feet, or less, from the terminal end of the sanitary sewer, preferably at a location where the sewer lies a few feet below the surface. The earth being removed, a section of sewer pipe eight feet long, and representing the upward half, is cut away so that the sewer current is seen rushing and surging on its race to the river. This basis is bottomed by a flat casting of iron, and is perforated by several rectangular slots, and provided by a slotted side which shall be capable of opening or closing the slots in the floor by the use of the lever. Above the floor are situated a double set of closely laid grates, the first stationary and the other movable by the lever.

The vault is walled by good brick, well laid in cement, and covered by a solid casting, having an aperture supplied with a screw cap.

Above this covering is another of wood, which allows the passage of scavenger wagons when taking position to unload. Water is now pumped into the scavenger wagon, and when not near a hydrant, service can be taken from the sewer current, as shown by the pipe. By this method the contents of the wagon is diluted and partially disintegrated, and is then allowed to enter the basin through the hose.

The basin now being airtight, the displaced atmosphere and gases pass out of the basin through the vent pipe, and are drawn away by the suction of the current in the sewer. The hose is now withdrawn from the aperture and the screw cap fitted on. Through a perforated pipe, steam, at a temperature above the boiling point, is ejected from the boiler. The steam, fresh from the boiler, enters the mass from the several perforations, agitates violently and causes complete disintegration. A pressure of sixty pounds steam gives a corresponding temperature of 358 degrees, so that if, as sanitary authorities agree, a temperature of boiling water, (212 degrees) for ten minutes, will destroy all pathogenic germs, it would appear that only a few moments would be required for the complete sterilization of the mass by steam at 350 or more degrees of heat.

The mass of sewage thus being sterilized, the gasses being driven away through vent pipes (as inoffensive as dirt, as innoxious as distilled water) is allowed to pass into sewer current through grated and slotted floor, slowly or rapidly, at will of operator, and is thence conveyed by sewer current, becoming a part of it, and reaches the river to be washed away. The sterilization is not considered necessary except where large quantities of sewage is to be disposed of, or when the river flow is not great enough to properly dilute sewage thus discharged into it. When the river flow is large, or the accumulations small, water may be ejected through perforated pipe, instead of steam. The rule adopted by the distinguished sanitary engineer, Rudolph Herring, of New York city, is that there shall be a river flow of not less than 150 cubic feet of flow per minute for every 1000 inhabitants to be served by sewer. By keeping this rule in view, sanitary authorities can easily determine when sterilization by steam becomes a necessity, which, in many instances, will depend upon the rainfall. I would also advise that, in periods of severe epidemics, house connections be abandoned, and that the aggregated excreta be all sterilized before allowed to enter river, for obvious reasons. "The sanitary sewage disposer," being in no way unsightly, and incapable of

disagreeable or unhealthy odor, can be placed at any part of the city most convenient, and can be operated at a nominal cost. When sterilization by steam is desirable, it can be operated at a probable cost of $85 per month, and when steam is not required, at much less. As will be observed, the method is applicable in all cities having a system of sewerage, or capable of even a limited amount of sewerage. Small patterns could also be utilized by factories, etc., for the purpose of sterilizing effete and waste products, a steam jet being taken from their own boiler with absolutely no cost. This precaution would only be necessary where the river adjacent to the city is already suffering from overpollution; where the pollution is destructive to fish, objectionable to manufacturing interests and detrimental to public health.

After careful consideration of the system, and some correspondence with scientific gentlemen, who have given much attention to such questions, I am pleased to believe that its introduction will supply a pressing need and its operation will be attended with success in all respects.

The method as described is submitted to my professional brethren of this association in the knowledge that if it bears the tests of your judgments, you will encourage its introduction, and if it does not, that your friendly criticisms may aid to some more perfect solution of one of the most important problems.

DISCUSSION ON DR. ROSSER'S PAPER.

DR. BLAILOCK said he was very favorably impressed with this paper, and the apparatus it described, for the sterilization of fæcal matter. If there were any subject of more importance than another to cities generally, whether of five, ten, or twenty-five thousand population, it was the disposal of its sewage. The arrangement figured there for the sterilization of night soil is unique and ingenious. Though not an engineer, he could see the simplicity and efficiency of the apparatus, and he thought it could be modified to adapt it to cities where no sewerage system exists. Many towns have good systems of waterworks,

but no sewerage. In such cities open privies were used, and the scavenger carts go around at night and remove the accumulations. He thought fæcal matter in such cities could be thoroughly sterilized by the apparatus.

DR. ARMSTRONG said the apparatus was the production of the chief sanitary engineer of Dallas. It reduced the cost to a minimum. In the city of Paris 2000 tons of night soil were sterilized and made into fertilizers every night. Steam application was not used in Dallas, but it was contemplated. It was not necessary to have a sewer system in order to use the apparatus. After deodorizing and sterilizing, the sewage became the best manure possible. The cost would not exceed a dollar a ton. The crematory was the only other alternative that could be relied on, but it was a very expensive method, costing $9 per cubic yard in Dallas.

DR. BURROUGHS said the apparatus was the need of the hour. Nothing else so absolutely necessary. The papers were continually crying, "clean up." They had a good system of waterworks in Houston, but the sewage was swept into the bayou, aggravating instead of relieving the trouble.

DR. CHRISTIAN thought the most important duty of the physician was to protect the public health, and to impress upon the public the importance of proper sewers and the disposal of sewage. In the town in which he lives there were three deaths from typhoid (?) the first week he went there. He found no scavenger wagons, and there were pig pens in every corner. The town of Fredericksburg was practically in mourning for eighteen months, owing to shallow wells, pig pens near by, no drainage, no sewerage. He thought that physicians might have to bear a part of the blame for not impressing forcibly on the people the necessity for good sanitation. Any cheap process for effectively disposing of night soil would be a blessing to the people.

DR. BRITTAIN thought the paper just read a very sensible and timely one. The apparatus was much needed and very cheap, costing only $350. There was no town or municipality that would not be willing to go to that expense. He suggested, and finally moved that the paper be authorized to be printed and given to the public, at once, through the press of the whole state. This was carried unanimously.

SECTION ON GYNECOLOGY.

REPORT OF CHAIRMAN, J. F. Y. PAINE, M. D.

GALVESTON.

GENTLEMEN OF THE TEXAS STATE MEDICAL ASSOCIATION—I feel it incumbent upon me to express my sense of obligation to you for honoring me, a second time, with the chairmanship of the Section on Gynecology. I am conscious of the responsibility imposed by the position, and realize the need of your generous consideration in my effort to discharge its duties.

The field of gynecology, during the past year, has yielded a rich harvest, but I have limited my gleanings to a subject which has greatly interested me, and which, I believe, possesses unusual value. I have endeavored to keep in view the fact that practical knowledge is what we all aim at, and to that end have selected a theme which, though not new or fashionable, is still fraught with usefulness to the general practitioner of medicine.

It has seemed to me that one of the most important topics to which I could invite your attention is endometritis and metritis. Considered with reference to their causes, etiological relations to uterine deviations, pelvic inflammations, prophylaxis and treatment. I shall not tax you with a rehearsal of pathological details, nor weary you with a recital of refined theories and varied uterine therapeutics, but will offer a few thoughts, culled from trustworthy sources, and recount some methods, whose efficiency has been demonstrated by crucial clinical tests. The frequence of their occurrence, the manifold causes capable of producing them, their persistence and intractability, the numerous and harrassing reflexes to which they give rise, and the painful and serious complications resulting from them, invest

the affections under consideration with an importance scarcely equaled by any other disease to which the economy of woman is subject. Inflammation of the mucous membrane of the uterine canal is the most frequent disorder of the female pelvic organs. A vast majority of women seeking advice for pelvic disease have one or the other of these affections, either independently or associated with some other complicating them. When we consider the accessibility of the endometrium to external agencies, not only in parturition, but also in the non-gravid state, the liability to the extention of specific inflammation of the vagina, and the periodic recurrence of the physiological vascularity of its tissues, subject to derangement from so many influences, it should not be a matter of surprise that endometritis and metritis are of such common prevalence. Again, when we consider the anatomical highways between the uterus and the peritoneal cavity, it is not difficult to comprehend the mode of invasion of the latter when disease exists in the former.

Comparison of the habits, modes of living and physical capacity of a certain class of women with those of females in refined society, would seem to furnish a key to the solution of the causes of uterine disease so common among the latter. The customs of civilized life militate against the healthy growth and vigorous development of woman. They depreciate her powers of endurance and resistance, and predispose her to the easy establishment of pathological conditions. Among the habits and influences which are pretty constantly operative to lower her physical plane may be enumerated: neglect of out-door exercise and bodily development; occupations which produce a high-wrought state of the nervous system; improper food; improprieties of dress; imprudence during menstruation; habitual constipation; fashionable dissipation. Reared under bad hygienic conditions, a girl reaches the age, but does not acquire the attributes of healthy womanhood. All those modes of life which undermine the general health and lead to feebleness of constitution, predispose to affections of the mucous membranes. It is a matter of common observation that delicate girls are fre-

quent subjects of leucorrhœa as well as of chronic pharyngitis, gastric and bronchial catarrhs, granular eyelids, etc. These local manifestations of the general state are expressions of faulty nutrition and disturbed functions.

The history of the past seems to indicate that many of the diseases of women generally prevalent at the present day scarcely had existence four centuries ago. But, infirmities have kept pace with the march of civilization, and in the modern American boarding school may probably be found the culmination of influences which operate against the training of a girl to become a strong, muscular, healthy woman.

As a matter of fact the modern girl inherits the diminished physical development of her educated and elegant mother; and from early childhood in accordance with orthodox views of discipline and refinement, she is kept in the close atmosphere of the house for many hours a day, when she should be romping in the out-door air. As puberty approaches greater restrictions are imposed. She is taught that active amusements and vigorous exercise are ungraceful and unladylike. To cultivate a pretty figure she is fitted with a corset—that abomination of female attire—and under its constricting action the form of her body is materially changed, and the development and functions of the organs situate within it, seriously compromised. The lower ribs are compressed and the movements of the diaphragm are restrained, which inevitably diminish the effectiveness of the lungs and limit the free swing of the heart. The liver is squeezed, and the peristaltic movements of the intestines are impeded, leading to constipation and ultimate malnutrition. The artificial stricture at the waist interferes with the return current of blood through the inferior cava, and thus predisposes to over-distension of the venous plexuses of the pelvic organs. Another effect of the corset is the forcing down of abdominal viscera upon the uterus and adnexa, crowding them out of place and embarrassing their functions.

At the most important and critical period of the girl's life—the period of greatest functional activity—when her budding

mind and developing body are most susceptible of disturbing influences, she is placed in a boarding school. And nowhere is physical culture more neglected than in the general run of our female seminaries, where every hour of the day is devoted, by rule, to some special task. Instead of outdoor exercise and diversions, girls are impressed that such pastimes are rude, and fit only for boys. Their hours of leisure are occupied by trivial, passive, indoor amusements, and a daily walk of an hour is considered sufficient exertion to satisfy the requirements of health. Such training, in lieu of making the girl a strong, muscular woman, with good appetite, and the power of sleeping well, develops the mind and emotions, but hinders the growth of body. The muscular system is replaced by fat and nerves, principally the latter. Thomas has asserted, as a matter of personal knowledge, that, regardless of the presence of menstruation, in some schools the regular routine of physical and mental exercises is not interrupted. "Obviously, at the very time the organs are developing their normal physiological functions, such a course can but produce evil results." Goodell tells us that he has been repeatedly asked by physicians attending such institutions whether it were possible that laundresses could have drugged the scholars to avoid washing napkins, soiled, as they would be, by healthy activity. I have been informed by ladies, who spoke from familiarity with the subject, that amenorrhœa among girls in boarding schools is so common that teachers have come to look upon it as entirely unworthy of consideration. The influence of school life upon the health of females is a serious question. Under existing unhygienic conditions, it should not be surprising to see girls returning home neurasthenic, with pale faces, cold feet, impaired digestion, backache, and disordered functions. With lowered vitality, the young lady makes her debut, and social dissipation succeeds the enervating routine of school life. With slight inclination for outdoor amusements, much of her time is spent in close apartments, in which the air is dry and depressing. It is exceptional to find a lady who walks a mile in a day, or ever engages

in any exercise beyond the quietest locomotion. During several hours of the day she is attired in accordance with the requirements of conventional decorum, with a large amount of clothing and ornamental trimming hung from her constricted waist. On state occasions, in full dress, (though half naked) with arms and shoulders bare, regardless of the temperature, or slight indisposition, she devotes the greater part of the night to the dance, and scorns winter winds and rain to keep engagements. An occasional evening is rarely set apart for rest, but, on the contrary, all are given to visitors and informal parties, and the necessary sleep is neglected. Impaired nutrition, lassitude, malaise, functional disturbances and pelvic trouble follow, as the logical and to-be-expected outcome of the vitiated circumstances by which our girls are surrounded. With systems enfeebled by habits of indolence, luxury and dissipation, "unfit for the duties of a woman, not up to what Nature demands of her as wife and mother," she goes to the nuptial bed with some lurking uterine disorder, connubial approaches frequently excite a train of pelvic discomforts, and the birth of the first baby not uncommonly signalizes the beginning of invalidism.

Beside the constitutional causes—including the various diatheses and cachexiæ—which predispose to endometritis, might be enumerated an almost infinite array of active agencies connected with the pathogenesis of that affection; but a practical purpose will be subserved by mentioning only the more common of them: such as excessive coitus, tumors in the uterine cavity or walls, injury from sounds and pessaries, or any operation whatever within the genital canal, when strict antisepsis has not been maintained; specific vaginitis, occurring occasionally in newly married women, whose husbands considered themselves cured of a recent gonorrhœa; marriage with pre-existing disease; prevention of conception. Parturition is by far the most frequent cause. Mismanagement of and injuries resulting from parturition; indiscretions during the puerperium; spontaneous or induced abortion. Either of these factors is capable of producing a congested state of the uterine tissues, and inflammatory complications not infrequently supervene.

The affection under consideration is often characterized by insidious inception, slow progress, long duration and comparatively mild symptoms. The symptomatology of uterine inflammation constitutes one of the most perplexing subjects in the entire field of gynecology. At times the signs are so slight and obscure that the disease runs a lengthy course without exciting suspicion of its existence. Leucorrhœa, menstrual disorders and nervous derangement may be present for years, without causing sufficient annoyance to demand medical attention. On other occasions, it excites complications which produce pain on locomotion and sexual intercourse; gives rise to an ichorous discharge, which causes vaginitis, pruritus vulvæ or cystitis; or results in painful sympathetic disturbances of digestion, circulation and innervation. The tendency of uterine disease is to gradually undermine the general health; and its most common manifestations are anæmia, pain, leucorrhœa, dysmenorrhœa, amenorrhœa, metrorrhagia, disturbances of bladder and rectum, digestive derangements, nervous affections, reflex neuroses and sterility. In this connection the important clinical fact should not be omitted, that a series of symptoms, such as pain in the lower part of the abdomen and back, inability to stand or walk, leucorrhœal discharge and disordered menstruation are common alike to most diseases of the pelvic organs, and constitute a serious disturbing element in diagnosis. Disregard of the "uterine syndroma" exposes the womb to arraignment for almost all the ills that female flesh is heir to. It is too often blamed for headaches, backaches, and various other so-called uterine symptoms, which may be due to alterations in the ovaries, affections of the bladder, rectum or stomach, loose kidney or nerve disease. Whilst no organ in the human body is so overtreated as the uterus, yet at times it is so overshadowed by the distressing reflexes it excites, that it entirely escapes suspicion. The general health may be so severely compromised that the local disease is completely overlooked. Persistent cough or progressive emaciation excites suspicion of pulmonary tuberculosis; loss of appetite, flatulence, gurgling and gastric

discomfort direct attention to the stomach; precordial anxiety and palpitation are attributed to cardiac ailment; cystitis is a common concomitant of womb disease and frequently "draws the fire" of the physician. The pathology of these reflexes is easily explained by the richness of the innervation of the genital organs, which are supplied from the sympathetic through the hypogastric plexus, and from the cord through the internal pubic. The rule should be, therefore, to always inquire into the condition of the rectum, colon, anus, bladder, urethra, kidneys and stomach, and carefully examine the uterus (by touch and speculum), in every woman with a chronic disease.

The views of modern writers on gynecology regarding the relation of uterine inflammation to versions and flexions of that organ, and to affections of other pelvic organs, are so various and irreconcilable, that whilst one cannot fail to recognize the importance of uterine disease, he is impressed with the evidence of imperfect knowledge of uterine pathology. There are some influential gynecologists who refer all uterine disorders to mechanical agencies; who consider displacements to be the primary cause of nearly every morbid state of the womb; congestion and inflammation being merely secondary results. Others of equal renown maintain that congestion and inflammation furnish the key to uterine pathology, and that all other changes detected in that organ, such as versions and flexions are secondary affections. The significance of uterine inflamation as a factor in the production of displacements, can scarcely fail to impress one who impartially studies the clinical history of cases coming under his care. The large, congested and tender uterus, with thickened walls, inflamed and granular mucous membrane lining its cavity, and pouring out abundant morbid secretion, accompanied by pale face, backache, lost energy, depreciated general health and hysterical bearing, make up a familiar picture; and it is not uncommon to find associated with such a condition some form of displacement, the likely consequence of tissue changes in the hyperplastic organ, and altered

states of the ligaments which poise and support it. Schultze, one of the most earnest advocates of the mechanical theory of uterine inflammation, has stated that "endometritis and metritis are complications which are caused by versions and flexions;" and yet, he admits that these same "complications may exist primarily and give rise to displacements." In every-day experience, cases are met with representing the different stages of uterine inflammation, *i. e.*, catarrhal endometritis, prolonged congestion of the deeper tissues, involvement of the parenchyma, uterine sclerosis, and cyst-formation, in which there is not the slightest sign of abnormal deviation. It is universally conceded that no circumstance combines so many factors which predispose to displacements as parturition; and a somewhat analogous condition of the uterus is produced by chronic inflammation of long duration. In both situations—as a result of persistent hyperæmia—the uterus is large, heavy, soft, and feeble, and the uterine ligaments which owe their strength, mainly, to muscular tissue derived from the former, participate in its relaxation and weakness. But displacement does not follow as a natural sequence in one class of cases any more than it does in the other. After parturition, involution and proper management obviate the accident; whilst in the latter instance, the operation of exciting causes is required to produce it. The traction of adhesions following pelvic inflammation has been emphasized as a common cause of uterine deviations, but such inflammation is nearly always consecutive to endometritis. The causative relation of uterine inflammation to flexions is supported by the clinical fact that the latter are frequently relieved by the cure of the former. If the altered state of tissue consequent upon protracted poor health and general debility, congenital defects, lesions of the perineum and the causative influence of inflammatory action be eliminated, it will be difficult to account for displacements of the normal uterus as a primary condition.

The anatomical relations and functions of the organs situate within the pelvis will explain many of their disorders, as well

as the mechanism by which they react upon one another. The blood vessels which supply the uterus and ovaries, the rectum and bladder, are so intimately connected that a disturbance in one organ is apt to derange the vascular apparatus of the others in varying degrees of intensity. A state of distension, relaxation and congestion of the rectum and colon will induce, if maintained for some time, engorgement of the vessels of the generative organs. Menorrhagia and metrorrhagia are common results of constipation and portal obstruction. On the other hand, chronic inflammation of the uterus is very generally complicated with hæmorrhoids and fissure of the anus; and vesical disturbance, in some degree, is a common incident. The dependence of salpingitis, oöphoritis, pelvic peritonitis and pelvic abscess upon uterine inflammation is susceptible of explanation, not only by continuity of structure, but, has been demonstrated by numerous abdominal sections by many able men in all parts of the world. Bandl states that, in the examination of one hundred uteri, he found disease of the tubes complicating endometritis in more than half the cases. In such a condition, it only requires some untoward circumstance to expel infectious material from the tube into the peritoneal cavity, and thus light up inflammation of structures contained therein. The correctness of this view has been verified by the labors and skill of Mr. Lawson Tait.

The common prevalence of uterine imflammation, the insidious influences which predispose to it, the numerous causes capable of exciting it, the complications which may result from it, and their far-reaching and serious consequences, furnish a subject worthy to challenge the most serious consideration of medical practitioners. To liberate woman from the dangers which are besetting her is one of the highest duties of our profession; and the first step to be taken is to undo, as far as we can, the wrongs that civilization are doing to her. An effort should be made to correct the mistakes and avert the sufferings which education, luxury, and fashion are imposing upon her. Our girls must be taught that outdoor exercise, such as walking,

riding, tennis, rowing and bowling is indispensable to the development and maintenance of a strong frame; that pallor and languor betoken disease rather than refinement; that physical health and strength are not only admired, but are essential to beautiful and useful womanhood. Besides reform in customs, fashions and dress, the girl should be familiarized by her mother with the physiological functions peculiar to her sex. Such self-knowledge would obviate many of her ailments. Girls ought to be educated to comprehend the nature of menstruation and the coincident engorgement of the uterus and ovaries, and the excitable state of the nervous system; and impressed with the importance of rest, keeping the body warm and the avoidance of exposure to cold and dampness during its continuance. Through ignorance of its dangers, ladies of the highest intelligence commit acts of the most reckless imprudence during the period of sexual activity.

The enlightened methods of the present time demand of obstetrical practitioners, faithful observance of antiseptic rules in the lying-in chamber. To insure safety from septic infection, every obstetric patient should be managed with reference to the most scrupulous attention to all the minute details relating to cleanliness; and the physician has not faithfully and conscientiously performed his duty unless he informs himself thoroughly as to the existence of laceration of the cervix or perineum, and resorts to their repair by surgical means before relinquishing the care of the recently delivered woman. In order that involution may proceed with normal rapidity and certainty, the puerperium should be conducted in strict accordance with modern obstetric rules; and especially should rest in the recumbent posture be enjoined until post-partum engorgement and weight have subsided, and the uterus has again become a pelvic organ. If the prophylactic measures briefly outlined, viz: improvement in the physical development of girls, modification of modes of dress and social customs, exercise of intelligent precautions during menstruation, skillful and scrupulous care during parturition and childbed, prompt and complete repair of accidents

occurring in childbirth should be effectually carried out, the number of women affected with pelvic disorders would become wonderfully diminished.

It ought not be a matter of surprise that some of the former modes of treating uterine inflammation were occasionally productive of more harm than good. The womb being easily reached, seen and treated, is sometimes over-treated, and doubtless, now and then, maltreated. Its tolerance of injury will explain the escape of many women from the grave consequences of blind groping and reckless interference in the earlier days of gynecology, when the merits of cleanliness were unknown. Unskillful methods of conducting examinations with unclean instruments; intra-uterine injections, without preliminary dilatation of cervix; and the indiscriminate employment of powerful caustics, not only perpetuated the uterine disease, but, it can scarcely be doubted, at times gave rise to salpingitis, peritonitis and pelvic abscess. Of late years, material advance has been made in the management of chronic inflammatory affections of the uterus, and we do not now view them in the same hopeless light as formerly. The most decided steps forward are antisepsis and drainage. The complete cleansing and disinfection of the uterine cavity, and provision for the free exit of inflammatory or septic products, are procedures now almost universally employed in discharging or infected cavities, or sinuses elsewhere in the organism. But, widely divergent views are held as to the best means of accomplishing those ends. Whilst the majority of gynecologysts, entitled to a claim upon our attention, advocate (in the disorder under notice) dilatation of the uterine canal, the use of the curette, and employment of drainage, they resort to different methods of accomplishing dilatation, are not agreed respecting the comparative merits of the dull and sharp curette, and drainage in various ways is commended by different operators, each seeming to be satisfied with his own peculiar plan. The dogmatical adoption of either mode, in its entirety, without discrimination, will not secure the best general results in practice, but must be varied according to the requirements of individual cases.

Acute catarrhal endometritis yields, as a rule, promptly to simple, decisive lines of treatment. Rest in bed, copious hot (115 degrees F.) vaginal douches, warm sitz baths, with introduction while in the bath, of a small wire speculum, which allows contact of water with the cervix, scarification of the cervix, and mild purgatives usually suffice for the cure when there is no great change in the mucous membrane. But when the milder course has been faithfully carried out without satisfactory result, or where menorrhagia or metrorrhagia is the urgent symptom, recourse should be had to dilatation, curettement, cauterization or irrigation and drainage. "Curetting is the rational treatment for catarrhal endometritis when simple methods have failed. By waiting too long, alterations in the mucous membrane will take place, the parenchyma of the uterus is exposed to sclerotic changes and follicular degeneration, and the possible extension of the inflammation to the tubes, so frequent in old cases of catarrhal metritis." (Pozzi.)

The cure of chronic endometritis and metritis, of whatever type, (granular, fungous or polypoid,) demands the invasion of the interior of the uterus. But the readiest, safest and most effective mode of attack has recently given rise to much discussion and difference of opinion. It would be inappropriate, however, before an audience like this, to review the various expressions of writers on this subject. I will, therefore, invite your attention directly to a line of procedure which is, with trifling modification, the plan inaugurated and warmly advocated by Prof. W. M. Polk. After a somewhat extensive experience of the various types and stages of uterine inflammation, extending through a period of two years, the method has been so satisfactory to me that I venture, with full confidence in its merits, to recommend it to you.

The plan consists of operative interference, supplemented by intra-uterine medication when the latter is indicated. The attainment of satisfactory results demands more than skilful performance of the operation; the safety of the patient will depend upon the thoroughness with which aseptic and antiseptic

precautions have been carried out. A general warm bath with soap, flushing the vagina with hot water, disinfection of pudendum and mons-veneris, with a solution of mercuric bichloride (1:1000), and clean gown are essential preliminaries. On the table general anæsthesia is induced and the vagina carefully cleansed and disinfected with soft soap and hot water and bichloride solution. In the left lateral position, with the use of a Sims' speculum, the uterus being steadied by a tenaculum, and when practicable, drawn down, the cervical canal is freely dilated by some pattern of steel dilators (I prefer Wylie's) and the curette* is directed to the fundus of the uterus, and with firm, steady pressure the scraping is done by bringing it first over the anterior face, then the posterior, the fundus, the angles and the sides in turn, until all the soft, spongy masses are removed; and finally the cervical canal is cleared of all diseased tissue. The uterine cavity is now sponged clean by means of applicators wrapped with absorbent cotton squeezed out of hot bichloride solution, and through a Polk's cervical speculum which has been insinuated into the os internum,† an applicator armed with cotton which has been dipped in carbolic acid, is passed to the fundus and turned about so that the surfaces are everywhere thoroughly touched. The vagina is then liberally mopped with bichloride solution, and a double strip of iodoform gauze, about an inch in width and three feet long, is carried by means of a long probe into the uterine cavity, packing it section by section, firmly in place until the entire uterus is filled down to the internal os, when the end of the strip is brought down along the posterior wall of the vagina and placed just within the posterior commissure, to facilitate removal in the event of distressing uterine colic. The operation is completed by loosely packing the vagina with iodoform gauze, sponging clean the

*I generally employ a sharp curette. By sharp (in contradistinction to the flexible dull instrument of Thomas) I mean that the edges are thin, but not cutting like a keen knife blade.

†This precaution is necessary, as without some such device the applicator will reach the uterine cavity after most of the medicament has been squeezed out in its passage through the cervix.

soiled thighs and back, and applying an antiseptic pad over the vulva.

The subsequent treatment comprises rest in bed, fluid food (mainly milk) during the first three days, a saline cathartic on the day following the operation, periodic evacuation of the bladder, (by means of a catheter, if required), hot fomentations over the hypogastrium, and suppository of one grain of extract of opium, if pain is harrassing. The gauze is removed on the fourth day, (unless earlier demanded on account of persistent uterine tenesmus), and a copious hot antiseptic vaginal douche is given. The latter is repeated twice daily to the end of a week, after which it is continued once a day for a week longer. The patient is allowed (barring co-existing complications), to get up on the seventh day, and usually strength speedily improves and recovery is rapid. A second packing of the uterus has been found necessary only in cases of chronic metritis, endometritis characterized by protracted chronicity, or complicated by disease of the tubes; and it has been accomplished at the end of a week without anæsthesia and with but trifling discomfort to the patient. But three cases have come under my care requiring the use of the curette a second time. One of them being chronic metritis with salpingitis, the other two, gonorrhœal endometritis with implication of the tubes and pelvic peritoneum. The second operation was done one month subsequent to the first. In some exceptional instances, in which uterine discharge persisted, the intra-uterine application, on two or three occasions, at intervals of five or six days, of equal parts of tincture of iodine and carbolic acid has proven sufficient for the completion of the cure.

The operation is unattended by shock, and pain is rarely an annoying sequence. In some instances slight elevation of temperature occurs (never exceeding 100° F.) immediately after the operation, but it subsides after the second day and remains normal. Serous oozing takes place in every case, which continues with more or less profuseness during the first four or five days. The procedure has never been followed by

inflammatory change in the pelvic tissues discoverable by careful physical examination. On the contrary, preexisting inflammatory deposits have either diminished or disappeared. As a rule patients are discharged at the end of a month.

The modifying effect of this treatment of the interior of the uterus upon diseased tubes has been forcibly stated by Prof. Polk and others, and attested by examples within my personal experience that were too well defined to admit of doubt. The removal of the source of infection cuts off the supply of morbid material from the affected organs, thus restraining diseased action within them, and checking the leakage of putrilage into the peritoneal cavity; it is also probable that in a certain proportion of cases, drainage of accumulations within the tubes is achieved by the displacement of masses obstructing their uterine orificies. If uterine disease were cured before resorting to laparotomy for the removal of a diseased tube, the latter operation might occasionally be obviated, and it would remove the necessity of sacrificing the unaffected organ as a matter of routine, as is the rule now to prevent the danger of its subsequent implication.

I have been impressed by the frequent association of displacements of the uterus with chronic inflammatory conditions of that organ; and particularly by the fact that a large per cent of flexions are rectified or improved by the mode of treatment just described. The exceptions seeming to be those cases in which the uterine disease was not cured, or of long standing where probably the tissues of the uterine walls at the point of flexion (on the side to which the organ is bent) had undergone compression and attenuation. Improvement of the circulation, innervation and nutrition of the uterus would appear to furnish a solution of the result.

Beside the clinical evidence in favor of this operative plan, its rationale is supported by common sense, as well as sound surgical principles. Dilatation of the uterine canal insures not only better drainage, but is essential, as a rule, to the effectual use of the curette. In some cases of subinvolution it is not re-

quired, because the os internum is already abnormally patulous. The curette accomplishes, in a few moments, what is doubtful of achievement by any other means, even after months of intra-uterine medication and "change of climate." It removes tissues infected by germs, and changed by inflammatory action, and promotes the substitution for them of a "regenerated mucous membrane." The dull curette is to be preferred after labor or recent abortion; the uterine walls being soft and thin, perforation may be produced by very slight force. Iodoform gauze packing has for its object both the drainage and antisepsis of the uterine cavity. It has, also, a special alterative effect upon the diseased endometrium, which is, to a certain extent, curative.

Endometritis and vaginitis of gonorrhœal origin merit special mention, on account of the serious consequences that frequently follow their occurrence. They depend upon each other, and have to be treated together in the most vigorous manner, by curetting, followed by copious intra-uterine irrigation with a solution of corrosive sublimate, 1 to 1000, scrupulous cleanliness and energetic antisepsis of the vagina by daily douches.

The most favorable time for operating, when conditions admit of election, is in the week immediately succeeding menstruation; the only contra-indication, and that of questionable weight, being the presence of concomitant acute inflammation within the pelvis, outside of the uterus.

In every act, in which the uterine cavity is invaded, gentleness, cleanliness and faithful attention to details, are of paramount importance.

Should laceration of the cervix and ectropion exist, its repair by trachelorrhaphy will constitute an indispensable step in the line of treatment.

Disturbance of neighboring organs, (bladder and rectum), and of those at a distance, (digestive canal, nerves, etc.), demand earnest attention. It is not usual for organic complications to persist and induce perplexing symptoms after the focal disease has disappeared. There is no function upon which

uterine disease reflects more constantly than on digestion; and the stomach frequently bears the brunt of such action. What, at the commencement, was a sympathetic derangement, may become, in time, an inveterate disorder, requiring for its eradication the most consummate skill. The pain which disturbs rest and prevents exercise, the dyspepsia which restricts the dietary and impairs nutrition, the irritable nervous system, which depresses and disheartens, all combine to disturb the balance between wear and repair, and deteriorate the general health. For their relief, the ends to be secured are freedom from pain, rest of body and mind, sleep, an equable circulation and nutrition.

A brief reference to the cases that have been treated, their complications and results will form an appropriate appendix to the discussion of uterine inflammation. There have been treated during the past two years in the gynecological service of the John Sealy Hospital, fifty-six cases of endometritis and metritis. Of that number nine were uncomplicated, seven being cured, and two deserted the hospital before completion of treatment. The others were complicated as follows: Twelve with salpingitis, endometritis cured in all, salpingitis cured in five, and improved in seven. Eight with salpingitis and pelvic peritonitis, endometritis cured in all, complications cured in four cases, improved in four. One with pelvic abscess, drainage through vagina, recovery. One with cystic ovaries and extensive adhesions, laparotomy, death on 11th day from an exhausting diarrhœa. Seventeen with lacerated and eroded cervices, trachelorrhaphy in each case, all recovered. Seventeen with flexions, thirteen ante, four retro, nine of the former and two of the latter cured, remaining six improved (two of the subjects of anteflexion now pregnant). Five with retroversion, endometritis cured, deviation rectified by use of pessaries. Four with stenosis of os, one of which was associated with vaginismus, three cured, one (with vaginismus) not improved and is now in lunatic asylum. Eleven with menorrhagia, nine with metrorrhagia, all cured. Thirteen with hemorrhoids and

fissure of anus. Seven with hemorrhoids without fissure. Five with fissure without hemorrhoids, all cured. Two with stricture of rectum and recto-vaginal fistulæ, appropriate operations, and recovery in both instances. Twelve with cystitis, all cured. Thirty-four with gastric disturbance, many of these persisted after the cure of the uterine disease. Three cases with lacerated perineum, perineorrhaphy in each case, all cured. The causes which gave rise to the diseases in the cases enumerated were parturition in twenty-two, abortion in nineteen, gonorrhœa in six, stenosis of os in four, chronic constipation in five.

[NOTE.—I am indebted to Drs. Hendrick, Jackson and Gammon, who have in rotation served as internes in the gynecological service of the John Sealy Hospital for the statistics herewith presented.]

A CONTRIBUTION TO THE PATHOLOGY OF THE FOURCHETTE.

B. E. HADRA, M. D.,

GALVESTON.

To my knowledge the fourchette has no written pathology; at least nothing of it can be found in the many text books I have examined. Still, after my attention had once been called to this apparently innocent structure, by an experience I will relate directly, I do not doubt that there exists such a pathology, and that its neglect may occasionally cause not a small amount of annoyance.

As the family physician of a newly married couple, I had to listen, uncomfortably often, to the sad story of the husband, who complained that copulation, executed even with the greatest tenderness, was a real torture to his wife, and that she lived in a constant horror of being sexually approached. It was explained to me that the trouble was entirely with the insertion of the penis, which was in no way abnormal; that after that part of the act was perfected, everything else was quite satisfactory. The existence of all and any of the known impediments and obstacles could readily be excluded, and, as an examination was not granted, all kind of random advice was given and followed in vain. She soon became pregnant, and as the trouble grew worse, she at last consented to an inspection of the genitals. This, however, left me as wise as before. There was to be found an unusual amount of vaginal sponginess and secretion; but this did not account for the experienced difficulty. The examination, though, was exceedingly painful. Under the general diagnosis of an hyperæsthesia, emollient and astringent washes were ordered, but no improvement followed.

No better fared another physician, who was consulted shortly afterward.

In due time, the lady made her first obstetrical campaign. The usual examination was again extremely painful, but it revealed perfectly normal conditions. It was a very slow affair, and when at last the head was cutting through, a revelation dawned upon my mind. An extraordinarily large frænum was, like a rubber cap, spread over the child's head. Evidently, a rent was unavoidable. I felt very much like incising the fourchette, but preferred to leave it, for certain reasons, to nature, which did the work in the most accurate manner, leaving out the musculature.

Recovery was prompt, and the further marital life of the couple was one of happiness and satisfaction. The husband, to whom the whole matter was afterward explained, gave such a graphic description of the experienced ordeals, that no reasonable doubt about the correctness of my assumption could be entertained. The abnormally large fourchette, a formation that properly may be termed a megalo-phrænum, was the cause of the difficulty. The penis got caught in it, as it were, and had to overcome the impediment by random manipulations before it could enter the vagina. The frequent insults rendered the fourchette morbidly sensitive, and caused a low form of inflammation, perhaps some cracks and fissures.

After once my attention had been called to this matter, I tried to recall such instances of my former practice as could bear on it; and also kept for the following year a closer watch over the structure in question.

The outcome of all this makes me believe that not enough stress has been layed on this seemingly trifling subject. I ask you, therefore, gentlemen, to help me in establishing the just claims of pathological significance to the interesting little fold.

That the size of the latter varies in different individuals may be accepted as a matter of course. The difference is quite remarkable. As an average, the middle line of a stretched frænum in the aparous is about one inch in length. In some instances, though, it is two inches, and in others it is only one-half inch. The smallest I encountered in a girl, where there

was a general rudimentary condition of the genital organs. I do not doubt that every physician has his experience with the megalo-frænum. He meets it especially in inserting Sims' speculum. He then has to pull and hook the fold down before he can get the beek into the vagina, a procedure which, as a rule, is very painful. In the parous woman, nature has mended the trouble by tearing or stretching the fold sufficiently to be out of the way. Under aggravated circumstances, therefore, the so-called perineal rent of the first degree is not only unavoidable, but even desirable.

Another, in my opinion, very common observation, is a great tenderness of the fourchette, even in the virgin. It seems to have a natural sensitiveness in common with all similar structures, like the penil, lingual frænulum, etc. As a rule, it may be stated that the posterior commissure is the most sensitive part of the female genital organs. I do not doubt that many a case of dispareunia, up to the full-fledged vaginismus, may be due to an hyperæthesia of the fourchette, especially when cracks, fissures, and, perhaps, ulcers, should be present. Considering what intolerable pains an anal fissure may cause, and how it sets into action a most intense reflex spasm of the neighboring muscles, it seems to me obvious that a similar complex of symptoms may follow the identical lesion of the fourchette. I had not yet the opportunity to examine such a case in this new light. I can, therefore, give no histories, but this explanation appears to me so natural and plausible that I expect a confirmation of it by one or the other of you in the near future.

I recollect, however, two well observed cases of intensely painful and stubborn ulcers in the posterior commissure, or, rather, in the fourchette. Both occurred in the first pregnancy of the victims. I think the etiology of such ulcers is now plain. They were originally cracks which, by some kind of infection, began to ulcerate. The irritation was kept up by the vaginal discharges, as well as by cohabitation, and thus resisted treatment until, in childbirth, the same operation was performed by nature, we are used to do in anal fissure by the knife.

Aside from the enumerated pathological conditions, I can understand how a megalo-frænum may form an impediment to vaginal drainage, and how a catarrhal condition from retention of the uterine and vaginal secretions may be the consequence.

It remains to say a few words in regard to treatment. In mild cases of hyperæsthesia or irritation, applications of cocaine or belladonna or of antiseptic washes may suffice. But it is evident that in more serious cases the sovereign remedy will be a discision, a cut through the middle line of the fold. A mere stretching may, of course, do, and perhaps some of the cases of vaginismus reported as cured by dilatation were relieved in such a way. Still it seems to me clearer, simpler and more surgical, if I may say so, to make a direct attack upon the real seat of the trouble. Excision of the fourchette, I think, will hardly be ever called for. If ulcers or fissures are present, the time-honored treatment of cutting right through them is evidently proper. Another inference to be drawn from my views is, that under certain circumstances the stitching of a simple rent through the fourchette in childbirth is unwise. As much as I am in favor of a primary suture of every deeper perineal rent, it seems from the stated theoretical deductions best to leave such little injuries to themselves.

THREE CASES OF UNILATERAL TUBAL AND OVARIAN DISEASES RELIEVED BY LAPAROTOMY, AND PRACTICAL DEDUCTIONS PERTAINING THERETO.

J. CUMMINGS, M. D.,

AUSTIN.

Was called March 10th, 1892, to see Mrs. B., aged 22 years; white; married several years; only child 14 months old. History of preceding pelvic inflammation, several years before while living in St. Louis; also two years previously while residing in Burnet, where she was treated by Dr. G. W. Christian, and operation recommended for relief of existing ovarian disease, but declined. When I first visited the patient she was in a paroxysm of pain located in the pelvic region, with excessive tenderness over the womb, extending more on the right side, relieved only by full hypodermic doses of morphine to return in a few hours, necessitating further use of morphine. Her condition of pain and suffering had existed several weeks prior to my visit, and continued notwithstanding daily attention, together with intrauterine medication, until the 2d of April, when, assisted by Doctors Mathews, Graves and Thomas, I made an exploratory incision, resulting in the removal of the right ovary. Prior to the operation vaginal digital examination showed a well defined enlargement to the right of the womb, very sensitive to the touch, the slightest pressure causing intense pain. The right ovary was found enlarged and very much indurated, bound down by firm adhesion, so much so that in breaking them up the entire ovary was eneucleated, before any ligature was applied, in fact before the organ could be lifted to the abdominal opening. No hemorrhage followed this entire detachment of the ovary, and it was unnecessary to ligate a single vessel.

The left ovary was thought to be normal, not only by myself, but by my assistants. An opening was made through the floor of the pelvis into the vagina and a strip of iodoform gauze inserted communicating the site of the operation with the vaginal outlet for drainage, and the abdominal wound was closed by interrupted sutures of silk, dipping deeply through the entire abdominal walls, including the close adjust-

ment of peritoneum, from both sides. Irritability of the stomach caused considerable trouble for several days, together with intense thirst. The abdominal wound healed by first intention. The gauze was removed after remaining about forty-eight hours, being perfectly white and clean; no discharge to amount to anything. When there began to be any distention of the abdomen, causing uneasiness and pain, I several times gave enemata of hot water strongly impregnated with common salt, which invariably relieved the gaseous distension and provoked good alvine evacuations. After a short time all opiates were discontinued. The diet consisted largely of cold or hot milk for the first few days. The recovery was complete and uneventful.

The extracted ovary was enlarged to probably twice its normal size and quite hard, its normal structure being changed by chronic interstitial inflammation. There were three small cavities containing pus not much larger than a pea in size. No microscopical examination was made of the specimen.

Was first called to Mrs. R. K. R., November 23d, 1891; age 31; white; widow. The vagina was so excoriated and inflamed from discharges from above, it was impossible to make a digital examination, much less introduce a speculum. I found it necessary, and administered chloroform to profound anæthesia. The walls of the vagina would bleed from the slightest touch. I dilated the womb, and made thorough intrauterine applications of equal parts of glycerine and carbolic acid, iodine and other remedies. After repeated applications, succeeded only in part in subduing the inflammation. Thirteen months passed and her suffering was localized in region of the left ovary. Digital examination revealed very slight, if any, enlargement of this ovary, yet it was very painful to the touch, and caused her intense suffering almost all the time. She readily consented to its removal. Consequently on December 24th, 1892, assisted by Doctors Mathews, Denton and Taylor, I removed the left ovary and fallopian tube by the abdominal method. A firm ligature was applied and the wound was dressed without any provision for drainage. I will state that the right ovary was examined as well as the tube, and regarded normal, and was left undisturbed, except by necessary manipulation in its examination. This patient was in fair condition, and passed through the whole, including the period of convalescence, almost without an untoward symptom that could be attributed to the operation.

I will state with her as with the former patient the strictest cleanliness and antiseptic precautions were observed. The re-

sult in this case was a full vindication of our whole course. Suppuration and inflammation were almost nil; in fact, I do not think a more perfect result could be had from an aseptic standpoint. The extracted ovary was hard at one end and showed a small ulcerated cavity probably two lines in diameter, of oval shape. The other end presented a soft tumor, easily peeled out, apparently an organized blood clot, about the size of any ordinary marble or cherry. I fear carcinoma in its incipiency. The family history points in that direction.

The patient at the present time, four months after the operation, is perfectly well, and says that if she was suffering only one half she was before the operation, she would again consent to go through it to gain relief. If my suspicions are correct, it is hoped that the operation was made sufficiently early to eradicate entirely all trace of the disease, so there will be no recurrence. The patient did not present the cancerous cachexia.

Mrs. C. W., married, age 26, was seen first February 21, 1893, when the case was placed under my care. She had been in bed since December last, most of the time requiring large doses of morphine hypodermically to give relief at all, and then often for only a short time. She was extremely emaciated and very weak when I was called. Digital examination revealed quite an enlargement to the right of the womb and extending below it and firmly attached, very tender to the touch. At first I packed the womb with gauze, properly saturated with medicine for internal application to the body of the womb. No permanent relief followed, in fact she progressed toward a sinking condition, the stomach becoming weak. Fearing collapse I recommended operation as the last resort, which was readily consented to. On February 27th, 1893, assisted by Doctors Denton, Mathews and Geaves, under aseptic precautions, the abdomin was opened and the right ovary and tube taken out. The tube was enlarged to nearly the size of a man's fist, firmly attached to the womb, but could be peeled off by the hand. The ovary was somewhat enlarged. The usual silk ligature was applied. The left tube and ovary were examined before extracting the right in order to avoid any sepsis that might follow the removal of the right tube and ovary, and found to be normal so far as we could determine. The abdominal wound was closed with deep silk sutures, and dressed as in cases before, with iodoform gauze and absorbent cotton in an aseptic manner. No drainage used. She made an uneventful

recovery. The right tube was composed largely of blood clot, a part of it, however, being hard and apparently due to an inflammatory process that had evidently been going on for some time. It is thought that the condition resulted from ectopic gestation, probably supervening in a tube affected with chronic salpingitis. The right ovary was somewhat enlarged and had evidently undergone past inflammatory action, as there was some induration, and evidence of interstitial inflammation.

The writer is aware that it is recommended by high authorities to always take out both tubes and ovaries, as in many instances after leaving one side not operated upon trouble follows, necessitating a second operation. Again, equally high authority advise taking away only diseased structures, leaving, in some instances, a part of an ovary, opening up the tube, removing pus and other inflammatory products, stitching the walls of the tubes together and leaving it in situ. Some say take out the diseased organs on one side, and if the other is in fair condition to not interfere. The latter course has been adopted by the writer.

The evil effects of unsexing a female by removing both ovaries have been fully demonstrated by the unhappy condition of those who have undergone the operation, some of them ending in insanity, others losing, after a time, their desire for sexual congress; become cross, and lose much that went to make them complete females; they become unsusceptible of the highest enjoyment of the marital relationship; doomed to live a barren and unfruitful life the remainder of their days. The writer questioned one husband whose wife had undergone complete extraction of both ovaries for disease. He stated that it should only be permissible to save life. He did not say so, but I felt satisfied that I saw depicted on his countenance a disappointed look. How could it be otherwise? Mated to one who could not return, with like feeling, his highest marital pleasure; mated for life to one who must feel that there was a void never to be filled.

These facts have so impressed many eminent men that they recommend saving only a part of an ovary, if no more. It is

the writer's opinion that some risk should be taken, if necessary, to preserve an ovary and tube that may maintain even a part of its function. Many women have undergone laparotomy more than once successfully, and should it be necessary another operation, removing the remained diseased structures, could be done should progressive disease demand it. Should your patient, however, recover, with one side in healthy condition, then she has lost so little that scarcely a regret will be indulged in. All sexual pleasure is fully preserved; her ability to bear offspring is not taken away. No mental despondency will follow, and our patient is almost in as good condition with one side healthy and preserved as with both organs in full operation.

It was not my purpose to write any detailed article on diseases of the female pelvic organs, but simply to mention some features of practical importance. There is no field in the broad domain of medicine or surgery that has so much advanced in the last decade as that of the pathology of the diseases of the womb, tubes and ovaries; in fact, our ideas have undergone radical changes, resulting in substantial benefit to the better half of humanity. When we contemplate the fact that so many good physicians and surgeons are timid in dealing with these troubles, permitting most intense suffering for weeks and months, giving only temporary relief with anodynes, often ending in the complete exhaustion of the patient, this fact is sufficient incentive for me to bring this important subject before the profession, as familiarity with home results may encourage some to successfully relieve some of these, among the greatest sufferers of the human race. Remove the cause of the intense suffering of many females, and then you can succeed in curing the morphine habit; on the other hand, tell her her sufferings are only from the effects of opiates, and you drive her to further extremes to deceive and use every means to obtain relief.

CERVICAL OR CORPOREAL ENDOMETRITIS.

W. M. CUNNINGHAM, M. D.,

BASTROP.

MR. PRESIDENT AND GENTLEMEN OF THE TEXAS STATE MEDICAL ASSOCIATION: I am before you by invitation from the chairman and secretary of the section on gynecology, and desire to present a brief discussion on two important forms of metritis—cervical and corporeal endometritis, or, in simpler words, the inflammation of the mucous membrane, lining the cervical canal, and that of the cavity of the womb, and, more especially, the treatment of the chronic forms of the inflammation.

The cervical variety is the most frequent disease of all uterine disorders, while the corporeal disease is not of very frequent occurrence. Inflammation of the womb is limited, in the majority of cases, to the cervical canal, invading about half of the vaginal cervix, and ending at the "os uteri internum."

It seems that a wise Providence has placed around the internal mouth of the womb, circular muscular fibres, with alert contractile power, as a guardian angel, to protect the nursery of embryonic life, from the invasions of all forms of sepsis.

The anatomical structure of the mucous membrane of the cervix being arranged in many sulci, in which the germs of disease may find lodgment, and it being more exposed to the causes of inflammation, may account for its being diseased more often than that of the cavity, which is a smooth mucous membrane.

Yet, the causes of inflammation sometimes get into the inner chamber of the womb, in the shape of a long neglected catarrh of the cervix. By accidents in parturition. In the reckless use of obstetrical forceps, which may be unclean. By the careless use of the uterine probe, or other gynecological instruments,

in the absence of antiseptics. By excessive excitation of the generative organs. By exposure. And by many traumatisms and sepsis. The inflammation excited destroys the integrity of the mucous membrane and its many utricular glands; unbalances the physiological functions of the womb; menstruation is deranged; the poor, unhappy woman is an invalid, and will usually remain so until the menopause, if not relieved by gynecological treatment.

Inflammation in the cervix, or body of the womb, as is its nature wherever occurring, may be acute or chronic. In a great number of cases, the acute inflammation of the mucous membrane of the womb, in its pathology, amounts to nothing more than an acute congestion, or hyperæmia, which soon passes away in the presence of rest and cleanliness, and leaves no mark of violence, and the parts return to their normal state. Otherwise, a chronic inflammation ensues, the acute the cause of the chronic.

The exanthematous variety of metritis, which occurs in the course of the eruptive fevers, which is always an acute affection, and which usually subsides with the constitutional disease which caused it, when it occurs in the young sometimes arrests the further growth and development of the womb, and the poor girl has to encounter the consequences, viz., vicarious and painful menstruation, with all of its manifold troubles, and the lonely solitude of many of being imparous. The puerperal variety begins as an acute inflammation, in consequence of parturition, in the absence of cleanliness, and ends in a chronic endometritis. In this form of the disease, involution is frequently arrested, structural changes occur throughout the entire uterus, the organ never returns to its normal size, and we have subinvolution complicating endometritis. Gonorrhœa is usually confined to the pudendum, vagina and urethra; but sometimes it makes an invasion higher up, into the cervix, the cavity of the womb, into the fallopian tubes and ovaries. The ovaries and tubes may become diseased in the course of any general endometritis, but when the endometrium of the cervix

and cavity is pouring forth an abundant purulent discharge, from the effects of a specific virus, the tubes and ovaries are very apt to undergo the changes of a ravaging inflammation.

These cases are very obstinate. The causes of cervical and corporeal endometritis are many. The nomenclature of each and every cause would be impossible, and if I could name them all my paper would become tiresome on account of its length. The causes are all embraced under the general terms of specific or sepsis, traumatism and chemical. Stenosis is usually the result of destructive chemical agents, nitric or chromic acid, caustic, potash, pure nitrate of silver, and the actual cautery.

It is not my aim to go largely into the history, ætiology and pathology of cervical and corporeal endometritis. Our text books are full of information on these subjects. But I do want to have something to say in regard to the treatment, which is the most important of all subjects at present.

There are a great many of our women suffering from cervical endometritis, and many with corporeal endometritis. What shall we do with them? Shall we send them to the specialist in gynecology? The great majority of them are too poor to stand the trip, physically and financially. Must they suffer on, taking a costly placebo, internal medication, with no hope of recovery? Must we teach them that gynecological manipulations, in the treatment of uterine diseases, do more harm than good? Must these poor women endure the aching head, the fluttering heart, the darting pains in their whole body, the constant backache and soreness of abdomen, the neurasthenia, the derangements of menstruation, and the mortification of a constant, dirty leucorrhœal discharge, because a specialist in gynecology is not in every hamlet or neighborhood? No, gentlemen, no. Let us do something for them. Under proper treatment a great number of them will be restored to health.

So much has been said and written concerning the difficulties to be encountered, and the danger and evil effects of entering the uterine cavity with gynecological instruments, that it has made cowards of many, and we find the internal mouth of the

womb closed and strictly tiled, and the sanctum sanctorum of its cavity is the dwelling place only for the specialist. Gentlemen, the claims of the age demand that every physician arm himself with a knowledge of these female diseases, and the implements to eradicate them.

The great majority of the cases of cervical and corporeal endometritis will recover under proper treatment. I do not allude to malignant inflammations in which a total extirpation of the cancerous womb, with its adnexia, offer the only slender hope of cure; nor do I allude to the specific variety of inflammations which have already disorganized the structure and physiological functions of the uterus, fallopian tubes and ovaries, in which laparotomy offers the only chance of recovery; but I allude to those simple, catarrhal, traumatic and specific inflammations limited to the cervix and body of the womb.

The treatment is simple. Cleanliness, antiseptic stimulation of the adynamic parts and free drainage comprehend it all. The general system needs no medication other than for any systemic wrong that may be present. If there is a general debility, proper nourishment, proper exercise and the administration of the chalybeate tonics, combined with some preparation of nux vomica, preferably the sulphate of strichnia, are very useful. Some good emmenagogue as a uterine tonic for deranged menstruation is frequently useful. Constipation, fluxes, diarrhœas, painful and burning micturition and indigestion call for treatment. If there be any diathesis, predisposing the patient to certain diseases, prophylaxis should be instituted, any systemic trouble should be corrected. For pain and rest and sleep, opiates should not be prescribed regularly, and when given, the patient should be ignorant of its use. Internal medication alone will not cure any womb disease of a chronic nature. I have said that cleanliness, proper stimulation of the asthenic parts and free drainage comprehend the whole of a successful gynecological treatment of cervical and of corporeal endometritis. Let me explain briefly.

Cleanliness can not be effected without instituting free drain-

age, and the parts will not remain clean any length of time unless a good antiseptic, or germicide, is used in the efforts to clean out of the cervical canal, or cavity of the womb, all effete matter. It may be a hypersecretion of the Nabothian or utricular glands to be removed. There may be purulent matter, granular formations, fungoid growths, everything foreign should be removed from the cervical canal, or the uterine cavity, if possible, and the parts washed out and stimulated with an antiseptic.

That long continued headache, which has remained, regardless of all headache medicines, will frequently be entirely relieved after the first radical treatment. That backache, soreness of abdomen, and those annoying, irregular pains over the body, and palpitating heart, in a few days will diminish and become quiet. Sleep will be more peaceful, appetite better, the blood will be purer, the woman will improve in every particular, and if the cervical canal, or cavity of womb, is kept clean, the poor woman will be well in a very short time. But how is this radical treatment to be effected? That is the question.

I can only tell you how I manipulate in the presence of these female diseases; and allow me to say, that I have been often gratified with pleasing results. A woman presents herself, with all the train of symptoms which cause me to suspect an uterine disease. The pudendum and vagina being washed, my hands aseptic, and emersed in a $\frac{1}{1000}$ bichloride of mercury solution, my operating hand oiled with a 4 per cent carbolic acid and vaseline mixture, a digital and bimanual examination is made, and as much a diagnosis of the conditions of the pudendum, vagina, uterus, and its adnexia, as is possible, is made. Pregnancy being excluded, a speculum, after being taken from the germicide solution, and oiled with an antiseptic, is carefully introduced into the vagina, and the cervix exposed.

If I find a red erosion of the vaginal cervix, or the mucous membrane protruding from the external os, with or without minute ulcers dotting it everywhere, and a tenacious hypersecretion of the Nabothian glands, discolored or not with blood or

shreds of broken down tissue, I decide that I have to deal with a case of cervical endometritis. If the flow from the cervix is more serous and less tenacious; the womb more or less swollen; menstruation deranged—appearing with pain; the flow being too little and every few days, or being too much, continuing longer than what is physiological, and it may be a constant bloody flow—the backache and soreness of abdomen being more pronounced; pain being referred frequently to the mammæ, the head, the heart, and the whole body; pregnancy can usually be excluded, for these cases are generally sterile—then I decide that I have to deal with corporeal endometritis. I bathe the cervix with a $\frac{1}{1000}$ bichloride of mercury solution, using a long nozzled uterine dressing syringe. Thus all the effete matter is removed from the vagina, from around the cervix, and as much as possible from the cervical canal or cavity of the womb, using uterine applicator and aseptic cotton for mops. The germicide wash is again used. Then all the remaining tenacious effete matter is removed from the cervical canal with an antiseptic sharp curette. If the disease is of the body, the cavity of the uterus is curetted, removing all foreign substance possible. Let me say here, by way of parenthesis, the dull curette is of no good service, only for removing clotted blood or some other loose foreign substance from the cavity of the womb.

I am aware that I encounter the teaching of many of our able gynecologists, who have written the text books, in regard to the use of curettes. The most of them advise the use of the wire, or dull curette. But I speak from experience. I have never obtained much benefit from the dull curette. It will not remove the tenacious secretions from the inflamed surface of the mucous membrane of the cervix and womb, as quickly, as easily and as satisfactorily as the sharp curette, in my hands.

But to my subject. The germicide wash is continued, and if the disease is limited to the cervix, the cervical canal is further mopped out with an antiseptic solution. If it is of the body, the cavity is washed out with a $\frac{1}{3000}$ or $\frac{1}{4000}$ bichloride of mercury solution. An antiseptic stimulant is then applied to the

cervical canal, and, if need be, to the whole uterine cavity. This can be done with a glass pipette, or the uterine syringe. The stimulants which I am accustomed to use for this purpose are carbolic acid and the saturated solution of the sulphate of zinc. Some others might do as well. About six or eight minims of the acid, or the solution of zinc, can be carried to the internal os, or to the fundus of the womb, and expressed. The further application of the stimulant can be spread all over the inflamed endometrium with a small cotton mop, being emersed in the antiseptic, and carried with the uterine applicator into the cervical canal, and, if need be, into the cavity, mopping the parts. The germicide wash is again used to the vagina and cervix, and not into the uterine cavity this time.

This completes the first dressing. The speculum is removed, a vaginal douche of warm water, containing, in solution, a little sugar of lead, or sulphate of zinc, or carbolic acid, or bichloride of mercury, or golden seal, or some other germicide, is ordered twice daily, and she requested to report back for treatment the fourth or fifth day. If necessary, the same treatment is made, though usually cleansing is about all that is necessary. The application of carbolic acid or sulphate of zinc, usually, is not needed oftener than from two to a half dozen times during the course of treatment, about every eighth or twelfth day.

If I should find the cervix swollen, and the cervical canal so closed that a curette could not be inserted, then in that event, under antiseptic precautions, a small uterine dilator is introduced until it passes through the internal os into the uterine cavity, and the cervical canal is gradually dilated. This sometimes has to be done under chloroform, ether or nitrous-oxide anæsthesia, though I scarcely ever use them for this purpose, preferring the hypodermic injection beneath the mucous membrane of the cervix a few minims of a 4 per cent solution of the hydrochlorate of cocaine, which gives local anæsthesia, and my patients bear the operation very well. It sometimes happens that on account of the bend in the cervical canal the dilator can not be placed. In that event I straighten the uterine canal with

the uterine adjuster, when the dilator can be usually introduced, dilatation effected, and a needful gynecological dressing performed, that of cleansing, stimulating the asthenic parts, and effecting free drainage, thereby aiding nature, the doctor of all doctors, in repairing the damages. Again, if the cervix has been unduly lacerated, by giving birth or by obstetrical forceps, after the inflammation in the cervical canal has been allayed, the anterior and posterior lips of the cervix can be yoked with a strong silk ligature, the whole body of the uterus gradually and gently drawn down even with the vulva, where, with the hawk-billed scissors, the deep angle of the laceration and a good deal of the sides of the torn surfaces can be vivified at one stroke; after which, by aid of the tenaculum forceps and the straight or curved scissors, all of the remaining cicatricial tissue can be removed. The parts thus vivified, after being washed with a good germicide, can be brought together and confined in juxtaposition by a few silk sutures, the cords removed from the anterior and posterior lips, the womb replaced, and the cervix dressed with a good quantity of a dry powder of iodoform and boracic acid. Over this may be placed a tampon of iodoformized aseptic cotton. This dressing left inside for eight or ten days, the patient all the while in the recumbent position, the torn cervix will be found, in nearly every case, to be completely healed, and the stitches can be removed. Likewise, if the perinæum be torn so much that the walls of the vagina protrude and a procidentia of the uterus is threatening, it should be repaired. No permanent good can be expected until these lacerations have been repaired. These operations can be done with cocaine anæsthesia, but I prefer chloroform or ether for the operation in repairing the torn perinæum, and of these two anæsthetics preference is given to chloroform.

Now, let me somewhat review and mention a little different treatment, which is required in corporeal endometritis. The treatment is almost the same, a difference being only in the application. Here we have a more obstinate disease, and one which requires more patience on the part of both patient and physician.

What I have said in regard to cleanliness, antiseptics and free drainage, applies to the successful treatment of this affection. Though I would not wash out the womb with a stronger solution of the bichloride of mercury than $\frac{1}{3000}$ or $\frac{1}{4000}$, unless it would be for a malignant disease. Nor would I wash the womb out unless I knew the cervical canal was well open, so that the wash could find an easy exit. There is some danger of the solution being forced into the fallopian tubes. The internal mouth of the womb is usually open, or easily dilatable, in this form of disease. I like the action of Marchand's peroxide of hydrogen, injected into the womb, when the cervical canal is well open, in all forms of inflammation of the endometrium, especially so before using the curette. The cavity of the womb being curvilinear from the fundus down to the internal os, that part can be easily curetted; but those angles at the mouths of the fallopian tubes are very difficult to curette. But this operation is very necessary in the treatment of chronic corporeal endometritis, and should be done as well as possible. The object to be attained is to get rid of all broken down tissues, all granular or fungoid growths, all effete matter, and vivifying the whole endometrium, which should be further accomplished by free drainage, antiseptic stimulation and germicidal washes. In regard to the use of the sulphate of zinc into the uterine cavity, unless the parts are well anæsthized, considerable pain will be brought about. Though the action of the zinc, in bringing about a reaction in the adynamic parts, is beautiful, carbolic acid is preferred on account of its anæsthetic effects. After its use, in a few minutes, the patient is usually easy. I have used the tincture of iodine, alone and in combination, as Dr. Skene, of New York, uses it, with carbolic acid, one part of carbolic acid to two of the tincture of iodine. But I rarely ever use iodine in the treatment of endometritis, now. I believe it seals up the mouths of the Nabothian and utricular glands too much, the parts become too dry, free drainage is, to the same extent, prevented, and the patient is longer getting well. The after treatment, which I usually pursue, is to wash out the womb with a

$\frac{1}{1000}$ to $\frac{1}{4000}$ bichloride of mercury solution every fourth or fifth day. The curette is used and the stimulant applied only when the healing forces are considered too slow.

After the uterus becomes tolerant of such gynecological dressings, the cavity may be washed out more often, sometimes daily, through a double current catheter, in which, as would be better, the returning calibre is twice as large as the ingoing calibre. This washing should continue as long as the flow from the cavity of the womb should indicate that tissue is being broken down or exfoliated. If there is a misplacement, which has not been often the case in my experience, the uterus should be replaced and retained in place by cotton tampons and position of patient in bed. After the parts become tolerant of such treatment, a well fitting Hodges pessary will usually be borne with much comfort and retain the uterus in place until the inflammation subsides, when the enlarged womb will have become less in size, the natural ligaments will have regained sufficient tenacity, and the womb will stay in place without such assistance. If the misplacement is complicated by adhesions, which can not with safety be broken loose, and the uterus can not be replaced, a great deal of good can be accomplished by the gynecological treatment of which I have just been speaking. If permanent drainage is effected, the womb will empty itself. It can be easily cleaned. Inflammation will usually give way. Nature will become accustomed to the misplacement. The woman will be in a reasonably good condition, and ought to be happy.

Now, gentlemen, in conclusion, let me say that I could continue this paper and discuss the different treatments found in our text books, but I have detained you long enough. I hope I have said enough to bring the subject before you, that you may discuss these matters profitably to us all. I am certain that I have seen much good come from the treatment herein contained. My paper is before you for the good of suffering women and your kind consideration.

PREVENTIVE GYNECOLOGY.

M. M. SCOTT, M. D.,

BROWNWOOD.

Preventive medicine is an important consideration in the medical sciences. Much can be done to protect humanity by preventing disease. By the use of methods that stop the spread of micro-organisms that carry in their course disease and death, a boon is conferred upon the human race.

If preventive medicine be entitled to great consideration, because human life and suffering are thereby ameliorated or saved, surely, in the light of modern research, when there is such a fashion or craze for specialty in the treatment of the pelvic organs of women, and, withal, such a disregard of clear and distinct therapeutic views in this department by many who go wrong in dealing with the uterine organs to the detriment of health, and sometimes the sacrifice of life, it is not inappropriate to inquire what can be done to lessen the ailments of woman, by which she becomes the victim of the pseudo gynecologist, on the one hand, or the pseudo abdominal surgeon on the other, both of whom are equally fatal to her health and well being.

It is not the purpose of this paper to decry work faithfully and intelligently performed in any sphere. There is much brilliant and admirable work done, and real benefit conferred, in all departments of gynecology. But those who wish well to the science deplore the tremendous amount of tinkering and cutting about the pelvic organs of women that is unmixed evil and even viciously wrong. It would be amusing, if not so serious, to note the rapidity with which full-fledged gynecologists come to the surface as specialists, in every town, that are mere cervix feelers, and have no broad and adequate idea of the science, or its responsibilities. Their conception of gynecology,

apparently, does not extend beyond the ability to feel the cervix uteri, and pass speculum, probe and tincture of iodine, and replace a so-called displacement.

This is the amamentarium of many so-called specialist. Fortunately, in the country, among the rural population, where a cervicitis is about the greatest trouble to deal with, not much harm is done; often, as little good, results. In the crowded centers of population, these pseudo gynecologists are an unabated nuisance and a positive menace to the welfare of the pelvic organs of our female population. Without any practical training or practical knowledge, and not a large fund of general knowledge, these specialists play the role of feeders to the large surgical hospitals.

Their probes, curettes and borax, with hot water and McIntosh supporters, occasionally make successful cures; but there will inevitably be enough cases with old pelvic adhesions, the result of gonorrhœal infection, or post-puerperal sepsis, to deal with, that these remedies only make future work for the laparotomist. Unable to detect the difference between a cervical catarrh and an endometritis with peritonitis, they probe and dilate, cauterize and curette, till the surgeon is needed to save life. Utterly incapable of dealing with or diagnosing anything of a difficult or intricate nature, with no definite idea of the pathological causes operating in pelvic diseases, they probe and use intra uterine applications till the smouldering embers of an old salpingo-oöphoritis, or peritonitis, or pyosalpinx is threatening to kill the patient, and radical measures are hastily demanded. It is this kind of minor gynecology that is harmful, and furnishes the laparotomist the victims for his sections.

These reckless tinkers that know not the techniqne of a thorough exploration of the pelvic organs, are at work in every town, and they, in one way or another, are responsible for much serious and painful disease and suffering.

This work of the minor gynecologist should be scientifically done. It is a legitimate sphere of special work. But the one who labors in this field should know the responsibility, and

master the details and the technique of the work, and know the meaning of every symptom; just as much so as the abdominal surgeon must master not only technique, but *possess much general knowledge;* there being no operation that requires more resource and skill than a well executed abdominal section for a complicated disease of tubes and ovaries.

The most fruitful sources of supply to the laparotomist is gonorrhœal infection and post-puerperal sepsis. The legitimate field of pelvic surgery would be greatly narrowed if there was no endometritis of septic origin. Fibroids, ovarian cysts, and cancerous growths would comprise about all the surgical work, if there were no endometrial infection. According to Apostoli and Keith, fibroids themselves, if not associated with pus-cavities, can be much better treated by electricity than by operation, and much safer. Hence the practitioner needs to be careful to prevent the introduction of septic material, either in the routine of office practice, or in the attendance on cases of confinement.

The mere introduction of a sound that is not aseptic may result in a series of pelvic troubles that may render the patient's life miserable. Parturition is a natural process, yet the utmost care should be exercised to prevent sepsis. It is a traumatism, and needs antiseptic protection. To prevent subsequent disease, antiseptic vaginal injections should be freely used by the patient, while the medical attendant should treat the case as he would a surgical wound, ready to absorb poison from his person or be infected by his careless after attentions.

Modern hospital service in such hands as Dr. Joseph Price, at the Preston Retreat, demonstrates the truthfulness of these statements. In his hands aseptic care saves the lives and health of many. The same preventive measures should be used by the general practitioner. Then there will be less pelvic peritonitis with abscess, and less septic endometritis, and so on, to make life miserable with interminable aches and pains, or possibly terminate with a brilliant surgical operation. The man who inveighs against antiseptics in parturient cases doubtless

has not done much thorough study or work in the allied science of gynecology. A large portion of gynecological work comes from dirty confinements.

The other most frightful and most serious source from which diseases and dangers arise that are preventable is gonorrhœal infection, which recklessly destroys the health and life almost as certainly as a missile of death, conveying a horrible stigma of uncleanness on a trusting wife that confides in honor and manhood, yet the reports from the medical centers teem with the frightful disaster from this source. Women can not know that the trifling glue, which Dr. A. says "will be all right and with no danger," will be to her sorrow and never-ending pain, with inflammation, exudates and pus tubes, a capital operation, and perhaps death, or possibly a partial recovery, but with the loss of organs that dominate her very life in its every relation, and rending her a strangely constituted being with an unfulfilled mission.

The general conditions of society are past comprehension. There is a rottenness and free habit of life, a blunted moral sense, a reckless abandon, especially in city life, to an extent that it is alarming. When we think that the daughters of our land are so often wedded to the licentious and debauched characters who know no cleanness, and whose bodies are walking sources of certain and deadly infection, sure to land them at an early day on the gynecological table, perhaps of the tinker or so-called surgeon, whose motto is "always operate whenever you get a chance."

Another important cause of disease is the idea of modern women that child-bearing is a "killing process," and that it must be prevented at all hazards, consequently they resort to devices to intercept and thwart one of nature's essential and inviolable laws—that of physiological rest from pelvic congestions. These devices of the devil are steadily and constantly numbering thousands of victims to neurasthenia and ovarian disease with their reflex and countless symptoms and pains. This is a crying evil, and needs to have the heaviest denuncia-

tion and censure of physicians. These practices have strewn the way with hysterical and neurasthenic wrecks. Too late they find that the giddy whirl of social dissipations are poor recompense for the loss of maternal feelings and pleasures.

But it is not altogether the application of septic material, in one form or another, or rough methods of dealing with nature's normal processes without warrant or excuse, that supplies the gynecologist with his clientele.

Modern civilization, itself, is guilty of a grave crime. Our children, from the time of puberty up, are dealt with, often, in an antinatural way. The girl is allowed to participate in all the gaities and frivolities of the social world, from the time she is large enough to attend "children's parties" on, through skating rink, dancing school, etc., with their endless flirtations, to the end of the list.

The emotional, intellectual and sexual natures are unduly stimulated, and the physical nature neglected. They grow up like tender flowers, and wither almost as quickly when they reach maidenhood, or assume maternal cares.

The wicked disregard of health laws are also seen in the methods of dress. The Moloch fashion requires of woman, dress which disturbs the circulation in the pelvic regions. The false relation in which the pelvic organs are placed to the spinal column; the displacement downward of the abdominal viscera, almost to the extent of deformity, and the interference thereby with free pelvic circulation, favors congestion, and its reflex nervous concomitants are sure to follow. The tissues thereby are greatly lessened in vitality, and are an easy prey to catarrhal and inflammatory action. Instead of the active exercise of all the muscles of the body during the period of growth and development, by which are developed the powers of endurance, the tissues are made frail and easily injured by non use, the organs become displaced with resulting uterine catarrh and sub-acute inflammations, or the patient becomes bedridden by the results of an easily lacerated cervix uteri or perineal tissues. Thus, a task which nature designed as an agreeable one—the raising of the young—is a burden scarcely to be borne.

Such is a brief picture of our fashionable, narrow-waisted women. Such women are lead to believe that they are in demand. These sickly specimens would soon be off the market if the Moloch fashion and the bad taste and poor judgment of men could be reformed. In this, as in everything else, it is sought to please the demand. The corset should be banished as an article of dress, and the laws of hygiene taught, and in its place let sensible apparel be fashionable and admired.

In enumerating the causes that are preventable, and that lead to disorders of the pelvic organs in women, we must not omit one other. I allude to the excessive surgical tendencies of the day. We have elsewhere detailed the manner of the incompetent minor gynecologists. There is also too much done by the surgical gynecologist, as well as the tinker. There should be a well defined reason for everything that is done. Not often does a lacerated cervix need an operation. A cautious use of the curette and carbolic acid, with general treatment, will often remove the cause of the lesion. It is, after all, the accompanying or coincident endometritis that needs the treatment. Operating for the laceration does not cure the former, and the relief amounts to nothing. Surgical interference should be the last step, not the first, in most cases of gynecological diseases. The ambition to do some great abdominal operation, and thus become famous, amounts to a craze, sometimes. Many a poor woman, today, regrets the rash haste of her surgeon, and deplores the foolish idea of herself, that she is no woman at all, nowadays, without a surgical operation, while she still continues to suffer from neuromatous stumps and the same old endometritis that removal of the ovaries did not cure. Many a man mourned prematurely the loss of his wife by the rash surgery of the times that teaches men to "operate whenever you get a chance."

Operations that look merely to the removal of the ovaries that are painful and supposed to be inflamed or cystic, are not justifiable. Thousands have been thus castrated purely to gratify a crave and the ambition of surgeons. Operations that deprive a

woman of an organ that exerts a controlling influence on all the complex relations of her life, feelings, actions, etc., and which leads to atrophy of the associated organs, should not be done if there be any other way to effect the same results. Often the disease may be due to a salpingitis or a long standing endometritis, and patient treatment of the wound is needed. If there be no cystic degeneration or pyosalpinx or destructive inflammation, electricity, combined with other therapeutic remedies, tonics, etc., is better and more conservative, viewed either as to results or as to safety from injuries and dangerous procedures with the knife. It may require more time and patient work to properly use galvanism and faradism, but it is well adapted to the treatment of very many chronic cases that do not yield to the ordinary treatment, and yet are not subjects for capital operations. In cases of long standing, with neurasthenic symptoms and a history of worry and care for many years, and every symptom a nervous woman can think of, with endometritis, etc., and ovarian neuralgia, but no pus tubes or abscesses, the remedy par excellence is galvanism, both local and general. Use it scientifically, apply the proper dosage and use discriminating care in all its details.

The gynecologist should be a broad-guaged man. He should be learned and careful and capable of distinguishing with accuracy the nature of diseases of this class, and able to discern which class of remedies is applicable, or whether a surgical operation or electro-therapeutics, will best conserve the ends of safe and conservative treatment, ever keeping in mind the fact that no doubtful and dangerous expedients are to be used, except as a dernier resort to save life or relieve unbearable suffering, until all safe measures have been tried.

The bane of modern medicine is the ignorant specialist, who is impatient and ambitious to rank with a Sims or Price. Every gynecologist should prepare for the work in all these departments to the extent his experience and learning will admit, and be ready to do the work properly, or at least to know when a formidable capital operation is necessary, and call a

well equipped surgeon to do it, rather than bunglingly kill or permanently injure by lack of requisite skill.

A properly done abdominal section, except in the simple case of castration, often is the most difficult in surgery. When the abdominal cavity is opened and successful results attained, rapid and thorough work must be done with minute precision, and often the settlement at the instant of questions that it took years of study and experience to master and mature the judgment. It is then no time to think out, as you proceed, perplexing problems. So that we say the rash surgery of the day in pelvic disease is also a preventable cause for uterine disorders as well as the other causes enumerated.

Many of you, gentlemen, quickly master the technique of surgical gynecology, but may I not ask how many combine the cool head, the broad range of study, the mature judgment and the general skill to do successful and conservative work in this now broad surgical field. It is nothing now to remove an ovary that is not connected with diseased structures, but modern surgery demands that only diseased structures should be removed. It demands that portions of ovarian tissue that are healthy should be left in tact. It demands that adhesions in many cases be carefully relieved, and that your patient shall not die nor suffer from your hasty judgment in undertaking this work. How many of us are fully prepared to meet this high standard? Had not the most of us better content ourselves to relegate to the specially skilled this class of surgery, or become specially skilled ourselves, lest we only add to the suffering and mortality already charged to tinkering and hasty, ill-advised surgery in the pelvic diseases of women.

A FATAL CASE OF TUBAL PREGNANCY.

B. F. KINGSLEY, M. D.,

SAN ANTONIO.

The following fatal case of tubal pregnancy is deemed worthy of record, and is given as a small contribution to the important subject of ectopic pregnancy. It will be seen with what theory this case best coincides as to origin, symptoms and treatment.

On the morning of August 28, 1892, my sister, Dr. Josephine Kingsley, was called to see Mrs. B., age 20, of medium height, weight about 135 pounds, of robust appearance. She had been married five months. Her menses ceased one month after marriage, soon after which she began to have small occasional pains in lower part of the abdomen and to the left. For these she consulted Dr. J. Kingsley on the 16th of May, who prescribed for her, and did not again see her until July 29, when she found her suffering from the same symptoms in a rather more aggravated form. The symptoms were regarded as suspicious, and she was advised to keep herself under observation. However, she disappeared until about 9 a. m. on the morning of August 28, when my sister was again sent for, and it was learned that the patient had been seized late the previous evening by a violent attack of cholera morbus. She had been vomiting and purging and suffering intense pain all night. At this time she was given a hypodermic injection of morphine. There was found a tumor in the left side. She was pale, her pulse small and rapid, and she had a pinched expression. At noon my sister requested me to go with her to see a patient, whom she suspected having ectopic pregnancy. At about 1 p. m., while at dinner, a message came by telephone saying that the patient was dead—to come immediately. We responded promptly, taking Dr. F. M. Hicks with us to assist in holding an autopsy, which was obtained with some difficulty. A cholera scare was prevalent just at that time, and a rumor that she had died of cholera soon spread.

To settle this question and to verify previous suspicions, an autopsy was finally consented to. On opening the abdomen, the child was found free in the abdominal cavity, on the left side, surrounded by large and firm clots, which extended along the cord some distance to

the opening in the tube, near which was the attachment of the cord, a photograph of which is herewith presented. The uterus was brought to view, and shown to be of nearly, if not quite, normal size. Next, the right ovary was exposed, and seen to be considerably enlarged—perhaps to twice its normal size.

I very much regret that I did not secure the entire uterus and its appendages, which I could not well do in the presence of suspicious members of the family.

In obtaining her history, it was learned that she had always, from puberty, suffered from irregular and painful menstruation. To this fact we may trace the enlargement of the right ovary, and probably tubal disease as the precurser of this misfortune.

Points of special interest in this case are, the age of the patient, her previous condition of health, her first pregnancy, the prompt suppression of the menses following marriage, the rapid development of pain and its continuous character throughout, which she attributed to, and was told was due to normal pregnancy.

The nearly normal size and condition of the uterus; (there had been no menstruation nor discharge of decidua); the attachment of the fecundated ovum to the fimbriated extremity of the tube, making its final rupture into the abdominal cavity inevitable. It seems probable that this would have gone on some time undisturbed, had it not been for the fatal attack of cholera morbus.

As will be seen, it supports the tubal theory of the origin of ectopic pregnancy, and emphasizes the necessity of the operative plan of treatment, for here, surely, no other treatment would have been so admissible or so successful, for there were no adhesions and no obstacles to a successful operation. Had this been done, even six hours before, I am certain her life could have been saved, but the cholera morbus so masked the symptoms, at the critical and only time, as to make a positive, or even a probable, diagnosis impossible, save by the previous history.

It may be interesting to speculate on the advisability of removing the opposite enlarged ovary, had this patient been operated on. I should have done so.

PELVIC PERITONITIS AND CELLULITIS.

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In an age when there is so much specialism we are apt to forget that pathological processes are the same in their essence in all tissues, modified only by the varying functions and the anatomical structure of each organ; that the course of inflammation is the same in whatever part of the body it occurs, and that the same essential surgical principles must guide the general surgeon and the gynæcologist.

The student is apt to feel, when he opens a book on gynæcology, that he is entering on some absolutely new subject, and that what he has already learned in general pathology, and the principles he has been taught as lying at the root of all good surgery, will here fail him. And certainly, till very lately, text books seemed to foster such a feeling. Gynæcological nomenclature is sufficiently perplexing, and to the beginner, at least, strikes confusion by its multiplication of names. And worse than its names is its terrible aetiology, of which much is so mysterious and so intangible.

Later text books, however, notably that of Pozzi on General Gynæcology, and Bland Sutton on Diseases of the Ovaries and Tubes, are doing much to lessen the mystery, to reject the doubtful and imaginary, and to substitute a fairly definite pathology, and treatment on ordinary surgical lines, for a morbid anatomy as trackless as the prairie, and treatment savoring of shotgun prescriptions and empiricism. This change is part of that tide of progress that is affecting so perceptibly the whole domain of medicine. It is the outcome of an increasingly accurate physiology and pathology and knowledge of what can and can not be done by drugs or by surgical agents.

As our knowledge of the pathological course of a disease increases; as our methods of diagnosis become more accurate, and our estimate of what can and can not be done by each drug is more exact, we cease to pour all the drugs of the pharmacopœia into our patient, on the principle that some one is sure to do him good, and having defined, as clearly as possible, the result we wish to attain, use only that drug which will produce that specific effect. So, in our school, the most advanced physicians give the simplest prescriptions.

And so, too, in gynæcology, the immense knowledge gained in late years, by the careful examination of pathological specimens removed in operation, and the invaluable lessons of the post mortem room, are slowly putting what was till lately enveloped in mystery on a sound pathological basis. It has thus become possible, with modern methods of diagnosis, and especially the skilful bimanual, to form a fairly good mental picture of what is the diseased condition and its probable progress, and thus to formulate definitely what one wishes to do in the matter of treatment. And here let us record a feeling of gratitude to those careful, painstaking workers, who have not been content with performing brilliant operations, but have turned the search-light of modern pathology on their specimens, and have described and figured what they have found. Pathology is a modern branch of medical science, and the combined surgeon and pathologist, a still more modern product. Let us all remember that the microscope and post mortem observations will throw more light than anything else on what we see by the bedside.

It has seemed to me that some time might not be unprofitably spent in drawing analogies between surgical pathological processes in the pelvic cellular tissue, and in regions accessible to the eye and touch, and in studying some lessons on pelvic peritonitis, which the post mortem room seems to teach.

Pelvic Cellulitis.—All sound pathological reasoning must depend on sound anatomy, so let us glance at the anatomy of the pelvic cellular tissue. The cellular area of the pelvis is shut off

from the perinæum by the pelvic fascia. This strong aponeurosis is attached to the pelvic wall, between the pubic bones and bodies of the ischia, along that thickening of the obturator fascia, known as the white line. From this it passes as a continuous sheet over the levator ani and coccygeus to the vagina in front and rectum and coccyx behind. Behind the pubic symphysis, it is closely blended with the vaginal orifice under the name of the triangular ligament. All inflammatory exudation, connected with the female genitals above the vulva, takes place above this strong fascia, and as in a septic wound of the palm of the hand, the exuded serum or lymph is forced to find accommodation in the back of the hand by the strong palmar fascia and the way in which the skin is bound to it, so the pelvic fascia forces the exuded fluids in poisoned wounds of the deeper genitals to find accommodation in the loose tissue above it, about to be described.

The cellular area of the pelvis is limited above by the peritoneum, and it is this cellular tissue which makes it possible to strip the peritoneum so easily off the abdominal parietes. From the whole of the pelvis the peritoneum may be stripped readily, except along the middle line. The peritoneum can not be readily stripped from the anterior surface and sides of the rectum, from the upper half or more of the vagina, from the whole posterior surface of the uterus, its fundus and anterior surface as low as the level of the internal os, and from the posterior surface of the bladder. Thus the cellular areas on the two sides of the pelvis are fairly well shut off from each other, except for a small tract of loose tissue between the cervix uteri and the bladder. The tissue between the bladder and pubes is partially shut off from the lateral cellular areas by the attachment of the pelvic fascia to the sides of the bladder. Water or air pumped into this cellular tissue separates the layers of the broad ligament, fills up that side of the pelvis, and may rise into the iliac fossa, but has a special tendency to travel along the psoas muscle, along the round ligament to the inguinal region, and sometimes along the obliterated hypogastric arteries and urachus

to the umbilicus. It has little tendency to pass to the other side of the pelvis. Embedded in this cellular tissue, and especially between the layers of the broad ligaments, is a most intricate network of arteries, with large companion veins from the uterus, ovaries, tubes, and vagina; and lymphatic vessels from the same organs; while lying in the cellular tissue at the side of the pelvis, are the lymphatic glands, which receive the lymphatics from the upper three-fourths of the vagina and cervix uteri, while the vulvar and lower vaginal lymphatics enter the inguinal glands; and those of the body of the uterus, tubes and ovaries pass to the lumbar glands along the side of the psoas muscle and front of the quadratus lumborum.

Keeping the anatomy of the parts in mind, let us draw a surgical analogy. Think of the clinical course of a septic wound of the palm of the hand. The palmar tissues being closely bound together, exuded serum seeks the back of the hand, where there is plenty of loose cellular tissue exactly like that between the layers of the broad ligament and at the side of the pelvis. The back of the hand swells, and if the process continues, even coagulable lymph finds its way into its subcutaneous and intermuscular planes. The hand and fingers are quite hard to the touch, pitting only on firm pressure. Neglect the cause of the irritation, and a diffuse abscess forms, burrowing in all directions and requiring many and free incisions, and all from a jag from a dirty nail, or a prick from a grouse bone, or any small septic focus. But remove the cause, get rid of the septic conditions of the original wound, secure free drainage, and it is astonishing how soon the swelling disappears. And is this not exactly parallel with what we have long clinically diagnosed as pelvic cellulitis?

Let me draw a clinical picture, such as any one in even a small gynæcological practice must be very familiar with. You are called to see a patient with a distinct history of an abortion, or the history may be only that she has missed a week, and then been rather profusely unwell, (which, in nine-tenths of cases, means an abortion,) a few days to a week afterward she

has a rise of temperature, severe pelvic pain, especially in one iliac region, constipation, perhaps pain on micturition, and a more or less mal-odorous discharge. Bimanual examination reveals a large mass in the pelvis, the size of an orange or larger, pushing the uterus to one side and holding it fixed, bulging on one side of the rectum, seldom depressing the posterior fornix. If you are a young, would-be gynæcologist, you feel very despairing about it going away, and expect it to suppurate. But under rest, hot antiseptic douches and laxatives, it all clears away in a marvelously short time, leaves your patient apparently as well as before, and there is no interruption in her child bearing. Is it necessary to suppose that there was accompanying peritonitis? Laparotomists say they seldom see such cases when operating, and for a very good reason, because they seldom call for operation; and they are seldom met post mortem, because they do not end fatally. But they have been met with, both on the operating and the post mortem table. Such cases have been diagnosed as uterine fibroids. Electricity has been used, and the supposed fibroid has astonished the electrician by vanishing utterly in a few weeks, thus rivaling the result of Apostoli and Keith. Such masses are as hard and as round as fibroids, and are apparently continuous with the uterus or separate from it only by a groove, and often the history alone will lead to a correct diagnosis.

If the condition be more aggravated, coagulable lymph and leucocytes take the place of serum, and a certain amount of thickening and cicatricial contraction in one broad ligament, drawing the cervix uteri to the side in which the exudation took place, remains as the permanent result of the attack, and it is rare that one examines a multiparous woman without detecting some old trace of such a condition, especially in association with split cervix.

Aetiology.—One analogous case would at once suggest sepsis, and only sepsis, and clinical experience also gives the same result. Such obscure causes as exposure to cold during menstruation should be regarded with the greatest suspicion. Thus

abortion, childbirth, surgical procedures, even the most simple, can account for most cases, and obscurer traumata, about which histories can not be got, may be credited with the balance.

Treatment—Again, on general surgical principles, the indications are: 1, removal of the cause; 2, absolute rest; and we know that in our parallel case if we incise and drain the palm wound the swelling on the dorsum will soon disappear. In our pelvic case the septic source is often not so easily defined, but at least an antiseptic vaginal douche should be routine treatment, and if there be any reason to suspect the uterus as the source of septic absorption, then an intra-uterine douche and curetting, if necessary, are among the indications.

And here I would emphatically insist, that wherever any surgical measure, even the most simple, is undertaken on the genital tract, strict antiseptics are necessary as a means of prophylaxis, and that it would be better if abortions and labors were followed by the skilled use of the antiseptic vaginal douche and antiseptic diapers.

Next to antiseptics, absolute rest is essential in all acute cases, and I regard the proper attention to the bowels as an element in that rest. The presence of scybala in the rectum is an undoubted source of irritation, serving to maintain pelvic congestion, and the routine use of salines, especially magnesia sulphate, to the extent of producing one or two free semi-liquid motions daily, is to be recommended, and acts, probably, partly as a derivative, partly by keeping the rectum free from hardened fæces. In the progressive stage of the inflammatory process, hot abdominal applications, with or without an irritant, (I prefer turpentine stupes) or a fly blister give distinct relief, acting as a counter-irritant acts in any deep inflammation; and to promote absorption. After the progressive stage has passed, hot douches, in the form of a gallon of water, as hot as can be borne, twice daily, the patient being recumbent, are undoubtedly valuable.

The question of intra-uterine interference must depend en-

tirely on a careful estimate of whether or not it contains any removable source of septic absorption. If it contains septic matter, that undoubtedly ought to be removed. Usually the intra-uterine douche, the cervix being dilated, if necessary, will be sufficient without the curette, unless there be any retained decidua.

Pelvic Abscess.—While later text books draw attention to pelvic lymphatic vessels and glands, I think far too little prominence is given to the role they play in pelvic suppuration. Of course we can not palpate a large and tender gland in the parauterine space, and for this reason we are very apt to forget their presence. But what is more common than to have a gland in the groin or axilla suppurating as the result of a neglected septic wound of foot or hand? And is it to be expected that the pelvic glands will escape the vaginal or cervical wounds? Are those who would describe every pelvic abscess as of peritonitic or tubal origin, not neglecting altogether the presence of these glands, and the usual course of pathological processes in septic conditions?

As the result of the palmar wound, we first were talking of diffuse suppuration of the cellular tissue all over the hand, or a glandular abscess in the axilla may supervene, and would it not be surprising if as a result of a cervical tear, plus sepsis, suppuration of the cellular tissue in the pelvis or a glandular abscess did not occasionally occur? Suppose, then, that such an abscess is formed, where would the anatomy of the parts teach us to look for its pointing? Into the rectum, vagina or bladder is possible, and cases of each are comparatively common; it may travel along the round ligament to the inguinal canal and point above Ponpart's ligament, along the obliterated hypogastric and point at the umbilicus, through the great sacrosiatic foramen and point on the buttock. I have private notes of cases opening respectively through the vagina, above Ponpart's ligament, at the umbilicus, and in the gluteal region. The treatment of suppurations must be again on the general principle. Whenever you have distinct evidence of pus, get at

it and give it free exit. Free incision and free drainage are the indications as soon as you can be sure of your diagnosis. The aspirator may guide you in finding the pus, and guide your scalpel in incising. Make the opening where it points if where antisepsis can be carried out. But there can be no indication for opening the abdomen to drain an abscess which can be drained by the vagina.

Before passing to pelvic peritonitis, I ought to mention that the constant galvanic current appears to hasten the absorption of pelvic cellulitic exudations.

Pelvic Peritonitis.—During two years in Edinburgh, I removed the pelvic organs in every post mortem examination in the Royal Infirmary, on a female body, at which I was present, and though press of work prevented me working up the large collection of valuable material thus acquired, yet the general examination of these specimens supported the conclusions I would draw from the specimens I have here to show you. And here let me say that I do not propose to deal with such causes of pelvic peritonitis as pyo-salpynx, ovarian and par-öophoritic tumors and tubal pregnancy, (under which class I would include, at least, most cases of pelvic hæmatoma or hæmatocœle); but rather with those milder cases of pelvic peritonitis which one meets with so commonly in the post mortem or consulting room; and which are not so clearly demonstrable as due to a definite cause.

CASE I. The pelvic organs of a patient who died during sexual maturity. The anterior surface of the uterus and broad ligaments shows nothing pathological, but the posterior surface is occupied by extensive peritonitic adhesions. These are concentrated round each ovary and tube, and though the tubes are both patulous, yet they are so bound down, and their relations to the ovaries so altered, that pregnancy would seem impossible. The adhesions to the rectum are less marked than at either side, but are such as to produce a retroversion of the uterus, which might be corrected, but it would be difficult to maintain the true position.

The second specimen is from a patient about 35 years of age, who died of cancer of the pancreas. There is a small patch of cervical catarrh (the cervical adenoma of Bland Sutton); the anterior surface of

the uterus and broad ligament is healthy, but for one or two small spots of secondary peritoneal deposit of cancer, but their posterior surface shows evidence of old peritonitis, and the tubes, ovaries and rectum are so bound together by old adhesions that the utero-rectal pouch of peritoneum is entirely obliterated. The uterus is not retroverted, but is drawn back as a whole, maintaining an axis in relation to the pelvis such as the normal uterus would occupy when the bladder is full. There is no distension nor apparent thickening of the tubes, but they are so twisted and so bound to the ovaries as to be undoubtedly functionless. Again, though the adhesions occupy the whole recto-uterine pouch, they seem more concentrated round the ovaries and tubes.

In the third case, from a negress over 50 years of age, with a syphilitic history, there are no adhesions except of the tubes to the ovaries; but both tubes are so adherent to their ovaries that their abdominal ostia can not be discovered, and sterility must have resulted. This specimen is specially interesting, because the vermiform appendix has been caught in the inflammatory process, and is bound down to the right tube, thus reminding one that, in operating upon tubes or ovaries on the right side, one might readily mistake the appendix for a thick band, and tear or cut it without ligature, with serious results.

CASE IV—Is from a nulliparous woman with an intravaginal cervix hypertrophied till it is two and one-half inches long. The body of the uterus presents several intramural fibroids, the largest of which is rather larger than a walnut. There are one or two peritonitic bands joining the body of the uterus to the bladder. Both tubes are tortuous, thickened and bound to their ovaries so as completely to obscure them. The omentum is adherent to the right tube; the posterior surface of uterus and tubes is adherent to the rectum. Again the adhesions are most concentrated around the tubes and ovaries.

From these specimens and from extended post mortem experience, I feel warranted in drawing the following conclusions:

First, that pelvic peritonitis is usually, perhaps always, due to the spread of septic or infective matter from the tubes.

The adhesions are always concentrated around the abdominal ostium of the tubes, and practically always on the posterior surface of the broad ligaments. If the poison spread, as it is often stated to do, by the lymphatics through the uterine wall or from a previous cellulitis between the layers of the broad ligament, there is no reason why peritonitis should not be as frequent on the anterior as on the posterior surface of the uterus

and ligaments; yet it is nearly always confined to the recto-uterine pouch. There is usually associated with peritonitic adhesion some evidence of there having been a salpingitis. The many ways in which the tubes may be infected certainly suggest that the salpingitis had existed before and probably caused the peritonitis. It is much easier to account for the almost constant involvement of both sides by supposing the condition due to a double salpingitis secondary to some uterine infection.

One of the specimens shows the tubes to be both pervious, and their mucous membrane, even under the microscope, apparently healthy; but here I would suggest a pathological analogy.

In gonorrhœal epididymitis in the male we have two distinct types of clinical history. In one the inflammatory process can be traced along the vas deferens to the epididymis, pain and thickening being first felt in the cord and then traveling downwards; and this seems analagous to a tubal inflammation followed by a periovaritis. In the other type the epididymis is inflamed without any evidence whatever of inflammation of the vas, yet undoubtedly infection spreads to the epididymis by the vas deferens, there being no other route possible.

Now may it not be that in some cases of gonorrhœal peritonitis the uterus and tubes, though acting as the channel by which infective germs have spread, yet have themselves reacted little to their presence. All mucous membranes are not equally vulnerable by the gonococcus; and further, the same mucous membrane is not at all times equally sensitive. In gonorrhœa in the male, the bladder, prostate and vesiculæ seminales are seldom invaded; the vas deferens may escape, even in cases where the epididymis is inflamed; the conjunctiva is peculiarly liable to infection, the nasal mucous membrane seldom or never. And again, if the urine be mild and kept so the inflammation of the urethra will be slight and will usually run a mild course; but concentrated irritating urine will at once convert a slight muco-purulent discharge into an abundant purulent one.

So in the female, it is the urethra that suffers worst. Vesical catarrh even then, in spite of the shortness and wideness of the

urethra, is infrequent, but infection of Bartholin's gland is comparatively common. I am strongly inclined to think from an extended experience in the female venereal wards in Edinburgh, while house surgeon there, that gonorrhœal uterine and tubal affections are after all not so very common, when one considers the enormous number of prostitutes that pass through our hands without any clinical evidence of either. Tubal abscess is rare. In six months experience of wards containing about forty beds I saw only one case where we had reason to suspect pyosalpynx; and, while I think mild, semi-chronic attacks of peritonitis (the well known prostitute's colic) are common, yet suppurative peritonitis, though possible and always to be guarded against, forms a very small percentage in the actual cases of gonorrhœa. I would urge therefore that though in post mortem examinations of cases of pelvic peritonitis we may find occasionally no evidence of disease of the tubal mucosa, yet that is no reason to suppose that the tubes have not been the vehicles of infection.

Only one of our specimens shows evidence of peritonitis on the anterior surface of the broad ligament, and in it there are uterine fibroids; and we know that the continued pressure of a foreign body will set up adhesive peritonitis without the presence of septic matter. Thus if the uterus be stitched to the anterior abdominal wall with a silk suture, though the peritoneum be not opened for the purpose, and all antiseptic precautions be taken, it will adhere to it; and I have no doubt that in this case the presence of the fibroids, acting as foreign bodies, caused the adhesions.

2. These specimens seem further to suggest the conclusion that pelvic peritonitis will usually result in sterility, and this would furnish another argument in favor of the existence of pelvic cellulitis without accompanying peritonitis. We have all experience of cases of pelvic inflammation followed by subsequent pregnancies.

3. The frequency of old pelvic adhesions discovered post mortem shows that such cases tend to run a mild course, and

do not, as a rule, endanger life, while the dense adhesions round such a sensitive organ as the ovary and the necessary obstruction to the fallopian tube amply explains the recurring pelvic pain so common and so distressing in patients who have had a peritonitic attack. Obstruction to a mucous canal is always associated with great pain. Take, for example, the severe pain associated with an obstructed bile duct or vermiform appendix.

Aetiology.—Besides, then, tuberculous and cancerous cases, dermoid cysts, tubal pregnancy and pyosalpynx, and innocent tumors causing adhesive peritonitis by pressure, I would narrow down the aetiology of pelvic peritonitis to: 1, traumata, including escape of fluids used surgically into the peritoneum. 2. The spread of septic or infective matter by way of the fallopian tubes.

Para-uterine cellulitis may co-exist, but is not the cause of the peritonitis; rather, they both proceed from the same infected condition of the genital tract. Exposure to cold, or indiscretions during menstruation, and simple shock, are causes which rest on no definite pathological data, and while helping us occasionally, in a convenient way, out of a difficulty, should be regarded with extreme suspicion as being very improbable causes of pelvic inflammation.

It might be well here to call attention to what cannot be too often insisted on.

For a long time, two years at least, after a man has had an acute attack of gonorrhœa, indiscretions in diet or indulgence in alcohol may render his urine irritating and induce a slight discharge, and this discharge being infective, may be communicated to the female and be the starting point of chronic pelvic peritonitis. Thus the conviviälities of the marriage feast and the sexual excitement of connubial relations, may bring back a discharge in the bridegroom which soon confines the bride to her couch, and dooms her to a life of invalidism and sterility, and then female relations say: "Poor Mrs. So-and-So has been so delicate since her marriage."

With regard to treatment, our specimens, and conclusions as to aetiology suggest:

1. The tendency in all but those acute cases which pass quickly into general peritonitis being toward cure, (but for the resulting adhesions), the first indication and paramount above all others, is absolute rest, the bowels being kept open by mild salines, and pain relieved by hot fomentations or turpentine stupes. Opium and antipyretics, as tending to cloak the symptoms, should not be given where they can be avoided.

2. As it is impossible by intrauterine treatment to reach infected tubes, and all attempts at treatment of the uterine mucosa will so disturb the parts as to increase the local inflammation, nothing further than a mild antiseptic vaginal douche should be used, unless there be some very definite septic condition of the uterus to be got rid of. Curetting will usually do harm instead of good.

3. Old adhesions matting together ovaries and tubes, and giving rise to pelvic pain, can not be affected by medicinal remedies, other than those which keep the bowels slightly loose, and and improve the general health.

4. Means tending to affect the local circulation may favor the partial absorption of inflammatory material and lessen passive congestion. Thus hot vaginal douches, glycerine tampons, and iodine applied to the vaginal roof, may be beneficial.

5. The natural condition of the uterus, tubes and ovaries is one where free movement is permitted. They should lie forward, close to the bladder, so that an air cushion formed by the air-containing coils of ileum may separate them from the rectum and its solid fœcal contents; and where uterus and appendages are bound down by adhesion and pelvic pain results, then, when all accute symptoms have entirely disappeared, pelvic massage may aid in stretching tight peritonitic bands and promoting mobility of the fixed parts—just as massage is indicated in the treatment of a joint stiff from the adhesions that result from a sprain or synovitis.

SECTION ON OPHTHALMOLOGY AND OTOLOGY.

A CONTRIBUTION TO THE STUDY OF THE INSUFFICIENCIES OF THE OCULAR MUSCLES, WITH MEASURES DIRECTED TO THEIR RELIEF.

REPORT OF CHAIRMAN, GEO. P. HALL, M. D.,

GALVESTON.

It can safely be said that there is no subject within the broad domain of ophthalmology that demands greater attention from the oculist than the one under consideration; nor one which exhibits so many varying phases and oftimes perplexing difficulties. No class of cases requires a more thorough, systematic and searching examination with reference to every possible point which may give evidence in diagnosis, or be an indication in treatment. If one would be successful in the treatment of these cases, it often happens that the oculist must be reminded of the fact that he is also a physician. In other words, he must study his cases from a broad point of view; must seek for causes, both near and remote, and after carefully tabulating all adducible evidence, local and general, he must weigh it in the balances to a nicety, if his conclusions are to be regarded as sound.

In deciding the question of diagnosis of insufficiences of the ocular muscles, many perplexities may arise. It may be well to remark here that this paper is not intended to apply to cases of neurotic origin. In making tests in a given case, the refraction must be corrected with scrupulous care before the results are accepted, and it is my invariable rule to use a mydriatic for

that purpose, preferably atropine, unless the subject be past forty-five. The refraction being corrected fully, the equilibrium test of Von Graefe is made, my usual custom being to make these tests by several different methods so as to compare results. With a gas or candle flame, twenty feet distant, I first use Stevens' phorometer, supplementing this with other well known methods. For a more complete description of different methods of testing, I must refer you to the text books, particularly to Stevens' work, etc. Whatever may be the method used, the testings must be repeated at many different sittings to be reliable.

In reference to the treatment of the different forms of heterophoria, I would briefly summarize by saying that we have three different methods at our disposal: First, gymnastic exercise of the muscles; second, wearing prismatic lenses; third, tenotomy, partial or complete, according to the views of the operator.

Gymnastic exercise is often useful in cases exhibiting weakness of all the recti muscles without decided want of balance. The use of prisms in the correction of heterophoria is, in my opinion, an invaluable method, and beyond question, in many cases, is capable of effecting relief, and in some cases a cure. In all cases in which prisms can be worn with satisfactory result, I advise their constant use. In those cases which exhibit the higher degrees of muscular insufficiencies, and others in which prisms are not tolerated, or, if so, fail to give relief, tenotomy is strongly indicated as the only probable means of success. In cases of heterophoria with ametropia, it is my practice always, save in very high degrees of heterophoria, to correct the refraction with appropriate lenses, and have the latter worn constantly some months to prove, in a logical way, whether the evils complained of are dependent on the refractive error or due to other existing factors. If the former, the lenses should give relief. In this way an important element of doubt is reliably excluded, and we feel very much surer we have to deal with an undoubted heterophoria. The following cases, taken from a number among my records, are presented

for your consideration, as illustrating the class of cases under discussion and the means used for their relief:

CASE I. Miss H. S., age 22, complains of inability to use her eyes for more than thirty minutes at a time, without great discomfort and headache following. General health good; fundus oculi normal under atropine V. R. 20-20 w., 1.75 s.; V. L, 20-20 w., 1.00 s., 50 c., 90° abduction 11°, adduction 16°, exophoria 3°. Miss S. had long worn an approximate correction of her myopia for all purposes, and consequently had an athletic accommodation P. 1° base in for each eye, combined with full refractive correction, as indicated above, was ordered for permanent wear with perfect relief of the troublesome symptoms.

CASE II. Dr. F., age 35, a prominent physician, suffers from asthenopia; is quite nervous; does not sleep well at night; general health below par; fundus oculi normal. Under atropine, eyes emmetropic, V. 20-20, abduction 7°, adduction, 22°, sursumduction R. 3°. L. 2°. R. hyperphoria 1° plus 1°, base down for R. E. was ordered tentatively. Subsequently R. hyperphoria 2½°, became manifest, but the prism afforded so much relief that the patient was satisfied to let well enough alone, and told me his nervousness was, in a great measure, relieved; that he slept well and could use his eyes at will.

CASE III. Arthur S., age 14, son of a physician, was sent to me for the relief of weak eyes, which compelled him to quit school. General condition good; ophthalmoscopically no lesion. Under atropine V. R. and L. 20-20 w. plus .75 s, abduction 3°, adduction 18°, esophoria 5°, in accommodation 5°. Exercise with prisms produced an adduction of 30°, esophoria 8°. A glass correcting hyperopia had already been worn without effect. I now ordered P. 1½° each eye, base out for constant use. A choice between prisms and tenotomy having been offered, the former was accepted, by the assistance of which the young man was able to resume school work without further embarrassment.

CASE IV. Miss I. K., age 13, general health good; ophthalmoscope revealed blurred nerve outlines, slightly raised, almost suggestive of a neuritis; retina hypersensitive. Under atropine V. R. 20-20 plus w. plus .50 c, .90°; L. 20-20 w. .50 s; abduction 5°, adduction 18°, sursumduction R. 2° plus; L. 2°; R. hyperphoria 2°. Inability to use her eyes for school work, coupled with headaches, induced Miss K. to apply to me for relief. Directed full correction of refractive error to be worn for all work, to determine if the difference in refraction might not be the chief cause of the asthenopia. This was done for a month without avail. P. 1° base up L. eye was then combined with

the spherical lens previously worn. This combination gave complete relief. Four years later, Miss K. again consulted me for weak eyes, saying that she had worn the glasses for over two years, when they began to pain the eyes, and she discarded them altogether, getting along very well until recently. I now found the refraction the same, but no trace of hyperphoria. The images seemed exactly level to all tests, with sursumduction of R. and L. the same. The refractive correction was now worn with satisfaction for near work alone.

CASE V. Miss E. C., age 10, an intense sufferer from paroxysmal headache. Attacks of late have greatly increased in intensity and frequency. Fifteen minutes reading will bring on a paroxysm that sends her to bed for an entire day. General health perfect; fundus oculi normal. Under atropia V. R. and L. each 20-20 w. plus 1.00 s; abduction 3°, adduction 25°, esophoria 4°, in accommodation 6°. A glass plus .75 s each eye, was directed for constant use. Two months' trial showed no improvement. P. 1° base out each eye was now tried singly and in combination w. plus .75 s without notable relief. Stronger prisms were not tolerated at all. Prismatic exercise, also, was used without benefit. Tenotomy was now advised and accepted, but had to be done, to my great disappointment, under general anæsthesia, owing to excessive fright on the part of the patient. Just before operating, the muscular status was abduction 5°, adduction 54°, esophoria 12°. Partial tenotomy was now done on right internal rectus muscle, leaving the extreme outer fibres and capsular connections undisturbed, as taught by Stevens. Ten days later, tests showed abduction 7°, plus adduction 50°, esophoria 5°. This correction, while not an ideal one, proved satisfactory to Miss C., which was the object sought, and she now wore her spherical lenses with entire relief of asthenopia and headaches. I may add that this case was treated five years ago and the relief still obtains, the young lady having made a creditable record at school.

CASE VI. G. T., aged 18, complained of severe asthenopia. General health excellent; fundus oculi normal. Atropine revealed emmetropia with normal V. each eye, abduction 3°, adduction 10°, esophoria 3°. Prismatic exercise of the muscles was done daily, and P. 1° base out R. E. was prescribed, with considerable relief, but Mr. T. objected strenuously to wearing glasses, and asked to be allowed to take the chances on an operation. Muscular status just prior to tenotomy was abduction 3°, adduction 58°, esophoria 8°. A graduated tenotomy of R. internus was now done, (under cocaine), and a few days later the same operation on the L. internus, leaving orthophoria, with abduction 6°, adduction 50°. The asthenopia now disappeared.

CASE VII. J. N. M., age 38, had to resign his position as book-

keeper on account of weak eyes and frequent severe attacks of migraine. General health good; each fundus showed slight myopic crescent. Under atropia V. R. 20-20 w. 1.75 s, L. 20-20 w. 2.00 s, abduction 4°, adduction 15°, exophoria 3°, sursumduction R. 3°, L. 2°, R. hyperphoria 1-2°. Subsequently R. hyperphoria 1° showed itself. P. 1° base down R. E. was combined with suitable concave glasses and worn with comfort for a year, at the end of which time the glasses ceased to give relief. I now advised a tenotomy for the relief of the hyperphoria, both as a means of relief and to determine, if possible, if the exophoria was apparent or real. Immediately before operation, the following was the muscular status: abduction, 4°, adduction 15°, exophoria 3°, sursumduction R. 3° plus L. 2°, R. hyperphoria 2°. Graduated tenotomy of R. superior rectus muscle was now down, leaving an exact correction. Two weeks later, tests showed abduction 7°, adduction 22°, exophoria 2°, sursumduction R. and L. 2°, hyperphoria o. Mr. M. was now able to read four hours a day, and soon after re-engaged in business.

CASE VIII. Capt. A. G. E., age 58, has been troubled with his eyes for several years; can not read much, and occasionally sees double. Has compound hyperopic astigmatism, for which he wears the perfectly adjusted correction given him by a St. Louis oculist. He has been treated by various oculists, but, strangely enough, surgical interference was never proposed. V. R. and L. 20-20 with glasses. The phorometer showed an extreme degree of esophoria, closely bordering on strabismus. Red glass over R. eye elicited dilopia, which was corrected by P. 6° base out. The abduction was 1°, esophoria 25°, hyperphoria o. The R. internus was now completely divided through a small conjunctival opening, great care being taken to disturb the capsula connections as little as possible. Tenotomy was done, a few days later, on L. internus in same way, with permanent result of abduction 5°, adduction 20°, esophoria 5°. Capt. E. now declared that he could use his eyes as he liked, and that he was entirely satisfied with the relief given him.

A critical review of the above cases would, I think, fully warrant the belief that the heterophoria in each case was entirely independent of any existing error in refraction, and was not, in any perceptible degree, influenced by the use of spherical or sphero-cylindrical correcting lenses. Every case reported was closely watched with reference to this point, the refraction carefully estimated and suitable correction given a thorough trial before resort to any other means. That hetero-

phoria is not of necessity dependent on an error in refraction is incontestably proven by the fact of its frequent occurrence in emmetropic eyes. It furthermore appears in some cases to be true, that prismatic corrections, when worn for a long time, are capable of bringing about the disappearance of the muscular error, as is seen in case 4, which gives every evidence of a practical cure, such as would be obtained by tenotomy. Another fact worthy of notice is, that a tenotomy may be entirely successful, where prisms have either failed to relieve or were not tolerated, as in cases 5 and 7. The fact has probably not escaped attention, that in but one of the above cases treated by tenotomy was the muscular balance, according to tests, perfectly restored. I may add that the object of treatment in these cases is to restore the easy function of the eyes, and that object once attained, I am content, even though I fall short of an ideal correction, for, after all, it must not be forgotten that in the treatment of insufficiencies of the ocular muscles, we have to deal, not with fixed mathematical factors, but with physiological factors of uncertain value.

DISCUSSION ON DR. HALL'S PAPER.

DR. R. C. HODGES, (Galveston), said that in as far as he knew, Dr. Hall was the pioneer of graduated tenotomy in the state of Texas, and admits of the special value of such procedure, and feels satisfied that graduated tenotomies are desirable to relieve asthenopia. Some authorities claim that muscular insufficiencies are always due to refractive troubles. If so, muscular conditions of this kind should be ever present in all cases of hyperopia, but such is not the case. Even emmetropic eyes are affected with asthenopia.

DR. ROB'T MOSS, (San Antonio), asked Dr Hall the tests he uses for heterophoria; also, whether a difference existed between test in accommodation with dilated or undilated pupil, or when mydriatic was used.

DR. HALL replied, he first corrects all errors of refraction, and only relies on tests after such corrections are made and worn; that the test under mydriatic was the only reliable test.

NEUROSES OF THE EYE DUE TO STRICTURE OF THE URETHRA.

JOHN V. SPRING, M. D.,

SAN ANTONIO.

MR. PRESIDENT AND GENTLEMEN: I fully appreciate the fact that in discussing diseases or conditions arising from reflex irritation, we enter a field where we are likely to be lost in the fogs of theoretical speculation. Also, that there is no hope of gaining wisdom by going deeper than facts, and fanciful theory or trite symbolism is a poor return for perverted truth.

It is not my intention to bore you with the consideration of the various trains of symptoms which are more or less peculiar to such reflex troubles, nor to tell you the anatomy of the parts, or from whence they derive their blood and nerve supply. But my desire is to deal with plain, clinical facts, and just such pathological conditions as may be necessary to show the relation between stricture of the male urethra and certain troublesome conditions of the eye, which are often mistaken for glaucoma or acute retinitis. We often find that the physical explanations of certain conditions are anything but satisfactory, clinical experience showing that a great number of morbid symptoms are not explained by the pathological processes found. Consequently we are forced to direct our attention to nervous reflexes, which experience teaches are liable to affect the organ or part under consideration.

And we must not forget that many sources of reflex irritation lie beyond the reach of investigation, and for this reason be all the more careful that we do not overlook important hints as to treatment.

Some one has truthfully said that, "next to the brain, the perverted functions or diseased conditions of the sexual organs most frequently cause reflex irritation."

That this is true in regard to ophthalmic symptomatology, and by far more frequent in the female than the male, has been established beyond question by clinical observers. I find in our literature reports of cases of obstinate eye troubles having been cured by simple cauterization of vaginal erosions, or by dilating the neck of the womb. But I read but very little about affections of the eye in connection with the male genital organs, except such as can be charged to syphilis, with an occasional mention of accommodative asthenopia, tenderness in the ciliary region, etc., due to masturbation.

Chronic urethritis and stricture of the urethra have been known to produce obstinate nervous dyspepsia, chorea, diarrhœa, tinnitus aurium, and many other such troubles. Therefore, I do not consider it unreasonable to suppose that the eye may suffer from the same source of irritation. The differential diagnosis between organic and sexual neurasthenic affections is not always an easy matter; but when the diagnosis has been confirmed by treatment in several cases, it leaves but little room for doubt.

In support of this theory, I will give you the history of three cases which have occured in my own practice. In the first, the case of Mr. L., the fact that his eye trouble was due to urethral stricture, was, as you will see by the report, discovered by accident.

Mr. L., a bookkeeper, aged 48 years, comes from a nervous family, many of them having periodic headaches, neuralgias, etc. Mr. L., however, has always been remarkably free from any character of sickness until the fall of 1887, when he had a severe attack of neuralgia, affecting the right eye, supposed to be due to indigestion caused by close confinement at his desk. After several attacks, alternating from one eye to the other, sometimes affecting both eyes simultaneously, general health failing, his family physician advised him to consult an ophthalmic surgeon, which he did. Trying glasses, rest and various plans of treatment without lasting benefit, he was at last advised that iridectomy was the only thing left that offered much hope. The patient refused, and left Chicago, drifting from place to place seeking relief. He called to see me in January, 1889, and gave in substance the above statement. No history of syphilis; had two

attacks of gonorrhœa, the last in 1887; despondent, emaciated, very willing to submit to any operation or treatment which promised relief. Examination R. E. V.=20-80, L. E. V.=20-60, which glasses failed to improve. Tenison plus; field of vision slightly contracted, no corneal or conjunctival trouble, refracting media clear, ophthalmoscope revealed only a slight hyperæsthesia of the retina, a little cloudy or hazy appearance about the fundus, but not sufficient to account for the defect in vision. I was not altogether satisfied with the diagnosis glaucoma, but prescribed 1-20 grain eserine to 1 ounce water, with directions to drop 2 drops in each eye every 4 hours, with iron and strychnia internally. At 11 o'clock on the night of the fourth day of treatment Mr. L. sent a messenger for me, saying that he was in great pain, and that I must call and do something to relieve him at once. When I reached his room I found that the cause of his suffering was retention of urine due to stricture. I succeeded, after a time, in giving him relief for the night, and the following morning requested Dr. Chew to take charge of and treat the stricture. Let him continue the use of the eserine. I saw him every few days. The treatment was never changed. His eyes improved very rapidly, and on the 20th of March, 1889, he called at my office for examination. Vision, 20-20 in both eyes; T. n.; field of vision, perfect; in fact there was not a trace of his eye trouble left. Mr. L. still lives in San Antonio, keeps a set of books for a large wholesale establishment, and has never been troubled with his eyes but one time since, and that caused by neglecting to use his bougie for over two months. A severe attack of supra-orbital neuralgia warned him of the neglect, and after thoroughly dilating the stricture again, all trouble was removed.

CASE II. Mr. B., salesman, age 37, always healthy, never had syphilis. Had gonorrhœa about four years ago. In 1891 had a severe attack of la grippe, and at once noticed that his vision was failing, which both he and his physician attributed to general debility; he had a severe cough and was losing flesh rapidly, and with this, the eye symptoms were becoming more and more pronounced; had repeated attacks of pain, lachrymation without conjunctival redness. He left Nashville, Tenn., visited Ashville, N. C., El Paso, Texas, and finally came to San Antonio in search of health.

In February, 1892, he called to see me, and, on examination, I found tension normal, field of vision slightly contracted, photophobia and lachrymation, refracting media clear. Ophthalmoscope failed to show any cause for the photophobia or amblyopia. R. E. V.=20-90, L. E. V.=20-100. Glasses would improve vision slightly, but caused increase of pain and lachrymation. Remembering the case of Mr. L., I had him examined for stricture of urethra, and found about two and

one-half inches from meatus a very tight, broad stricture; could with difficulty pass No. 8 sound (French). He was placed under treatment by dilatation and antiseptic wash, for stricture, and 1-20 gr. eserrine sulphate 10 grs. muriate cocaine to water 1 oz., 2 drops in each eye three times daily. On the forty-fifth day dismissed patient, T. n., field of vision perfect, all pain and photophobia relieved. Gave him No. 20 bougie, with instructions to pass and dilate the stricture every twelve or fourteen days. Mr. B. now lives in Uvalde county, Texas. I see him very often, and he tells me that his eyes are perfectly well; never give him the slightest inconvenience; also, that his general health is improving very rapidly.

CASE III. Mr. D., stenographer, aged 28 years, native of San Antonio, very delicate, nervous temperament. Has been employed in the office of a law firm for years. Some time in November, 1892, had an attack of la grippe, and from that time on in bad health. Still did not give up work. On the 12th day of December, 1892, after a day of close confinement at work, retired late, feeling very unwell; waked at 5 a. m. with violent headache, intolerance of light, spasmodic twitchings of the eyelids, followed by nausea and vomiting. The physician who attended him gave him a mercurial purge, and other remedies, quinine, etc., thinking that he was suffering with malarial neuralgia. But after three days treatment, with no relief of eye symptoms, I was called.

Examination. — T. n., refracting media perfectly clear, fundus healthy, field of vision contracted concentrically, with central vision perfect in moderate light. Photophobia and lachrymation excessive, accompanied by very annoying photopsia. All of these symptoms were developed in abont twelve hours. Diagnosis, acute retinitis. Placed patient in a dark room; ordered valerinate zinc, ½ gr., three times daily, to be gradually increased. Also, iron and quinine, hot water applications to lids. After many days and no improvement, I decided to have him examined for stricture. Patient consented, and we found a very slight contraction about two inches from meatus. A No. 20 bougie passing with but very slight resistance, but the urethral tract was very sensitive throughout, with a copious gleety discharge.

He was treated with antiseptic wash (4 per cent sol. creolin in water) and commenced the gradual dilatation of the stricture, which was continued until a No. 30 bougie (French) would pass without resistance.

The eyes improved from the very beginning of the treatment, and he resumed his duties at the office on the nineteenth day of treatment. All local treatment for the eyes, except bathing with hot water, was discontinued when the dilatation of the stricture was begun, and, in my judgment, his recovery was due to the treatment of the stricture.

The underlying pathological condition in these cases was certainly chronic inflammation, with stricture of the urethra. And the most potent factors in producing sexual neurasthenia, decrease in nerve power and impoverished blood were, to a greater or less degree, present in each case.

From these remarks, and the cases as reported, it will be seen that I unhesitatingly adhere to the opinion that stricture of the urethra was the cause of all the eye trouble in each one of these cases, and I am fully persuaded that very many of the obscure eye troubles met with could be accounted for in the same way.

DISCUSSION ON DR. SPRING'S PAPER.

DR. CHILTON could not see the relation between the eye and urethra, however, understood its relation in childhood; nor could he understand the relation between glaucoma and stricture, and thought it incidental; nor how stricture could produce iritis; however, he hoped Dr. Spring would continue his studies in that direction, with a view of clearing up the question.

DR. HALL: "Did you exhaust all other methods before urethral treatment was inaugurated?"

DR. SPRING: "Yes;" and in reply to Dr. Chilton said he did not claim the case to be glaucoma, but a simulation.

DR. CHILTON: "I thought you made the statement that your diagnosis was glaucoma, and treated it to that end."

DR. HODGES related a case of blepharospasm in which all organs were thoroughly examined, but concluded it was a case of neuroses. However examination of genitals showed prepuce constricted and bound down with adhesions. Circumcision relieved the blepharospasm, but does not claim the conditions primary cause, rather secondary, and that the eye symptoms were only a portion of the neuroses.

DR. CHILTON: "Did you make an ophthalmoscopic examination for cupping of the disc, etc.?"

DR. SPRING: "Cupping of the disc and amblyopia existed." Dr. Spring then related the history of a case. A woman had been treated for eye trouble. Examination of urethra showed stricture, which was treated by dilatation and other appropriate methods, but no treatment to the eyes. With cure of stricture, eye trouble disappeared.

DR. IRVIN POPE said he had had considerable experience with venereal diseases, and had had several cases in which headaches disappeared with proper treatment of strictured urethra.

DR. HALL said he did not believe it possible to classify reflex neuroses, and did not know that boundaries could be defined. Ocular reflexes are frequently caused by uterine trouble, but he did not understand why urethral stricture should not cause eye symptoms, and that Dr. Spring had given evidence that such could be the case.

NOTES ON "TREATMENT OF TOBACCO AMBLYOPIA."

B. A. POPE, M. D., (DALLAS.)

NO PAPER READ.

Dr. B. A. Pope (Dallas) did not expect to come down, consequently did not prepare paper as indicated in list of papers for section. However, wished to relate his treatment of tobacco amblyopia. The ophthalmologic world was divided as to the causation of (tobacco) amblyopia; still, the majority, he believed, do not attribute the disorder to tobacco, but to whisky. Found such not the case, for he has had, in his experience, cases of pure tobacco amblyopia. However, since whisky is such a universal stimulant, doubts may arise. Symptoms were well established in the case referred to. Specific treatment is deficient. Abstinence from the cause being productive of recovery. Strychnine never cured a case, but probably makes a change for the better.

When cocaine was discovered, he set to work immediately experimenting in every direction. He had four cases of tobacco amblyopia at that time.

Since the physiological actions of cocaine indicated probable good effect on symptoms of such disease, he treated the cases with the new drug. Three cases were of an acute nature and one chronic. Abstinence of tobacco not required or adhered to, yet two cases recovered in about two weeks; the other was cured in six weeks. The chronic case was of three years standing. Cocaine, 1-8 to 1-4 gr., along with other remedies, cured the case in four months. Those cases of great excesses in whisky and tobacco, one of seven years standing, yielded after treatment of seven months. Treatment: Owing to œdematous condition throughout system, and general sluggishness, cocaine was combined with pilocarpin and strychnine, proved effica-

cious, but did not yield to drugs used singly, and claimed this method of treatment of vast importance.

Cocaine is a drug of limited application, but believed that it will cure tobacco amblyopia. He had cases where patient continued use of tobacco, but cocaine proved efficacious.

Dr. Pope also gave, in brief, his experiences with methyl-violet, in "treatment of certain tumors of the face and eyelids."

In a case of superficial ulceration, which should have been removed surgically, but disappeared under treatment of $\frac{1}{1000}$ and $\frac{1}{500}$ solutions applied locally, without leaving a trace of the growth.

Simply call attention, so others may experiment, and thus do away with painful caustics.

Furnuncle (carbuncle) of lower lid, as well as other portions of the body, disappeared after short treatment.

The method of using was by external application on absorbent cotton.

In those cases of tense skin, hypodermatics and external applications were used, and, in the later stages, punctures in centers of softening and extrusion of contents, after which, cavity was filled with solution, dressed and let alone. Furnuncle on lids and nose can be stopped absolutely, and pain or other disagreeable symptoms dispelled.

DISCUSSION.

DR. HALL: "Did you get bad effects from cocaine injections in the case of tobacco amblyopia?"

DR. POPE: "Only slight stimulation of the heart, but not otherwise; caused no discomfort to patients. 1-8 to 1-6 gr. hypodermatics used."

DR. MOSS: "Had you any trouble curing the cocaine habit after cure of the tobacco amblyopia?"

DR. POPE: "Do not believe in the so-called cocaine habit. After recovery from disease, cocaine was stopped with no ill results."

DR. IRVIN POPE: "A specialist who treats cocaine habit says it is the easiest habit cured. The drug is simply stopped and the desire ceases."

DR. HODGES knew of a case of cocaine addiction, was a perfect wreck, in which drug was discontinued and perfect recovery rapidly followed.

THIERSCH'S SKIN GRAFTS FOR PTERYGIA.

H. L. HILGARTNER, M. D.,

AUSTIN.

About ten months ago Mr. V, age 45, was brought to me presenting a condition of both eyes unlike anything I had ever seen before. The greater part of the ($\frac{2}{3}$) conjunctival surface was covered with thickened tissue, forming pterygia. They extended from the inner and outer canthus in both eyes. The edges of this inner and outer growths met in lower part of eyeball. According to history of patient condition presented was caused by the use of strong solutions for so-called "granular-lids." In consequence of the extent of growths, the palpebral conjunctiva suffered by contraction, producing symblepharon. The symblepharon was not due to the adherence of denuded mucous membrane, but was the direct result of the diminution in conjunctiva from involvement of the faulty tissue.

Here, then, were two eyes demanding double attention in consequence of what is ordinarily considered a mild affection of the eye. The regular operation for pterygia of moderate extent could not be considered, since clearing of cornea with subsequent closing up of gap in front of retracted pterygium by drawing the conjunctiva from above and below to a horizontal linear wound could not be accomplished on account of lack of healthy conjunctiva, and to have brought edges of the growth together would have been promptly followed by a recurrence of the trouble.

Having read accounts of Dr. Hotz's successful experiments with skin grafts for symblepharon, I thought an attempt to relieve symblepharon in this case by a similar procedure advisable, in hope, thereby, not only of relieving the drawn state of the lower lids, but also of preventing a recurrence of growth

on the cornea. So accordingly the forearm was bared and the part cleansed thoroughly from which the graft was to be taken. Thereafter the pterygium (external) was carefully dissected from the cornea and allowed to retract as far as it would.

Upon the large wound-area resulting from the retraction of the conjunctiva, a graft was placed, shaved from the forearm and directly transported from the razor to the eyeball. The graft (7-9 m. m.) was carefully spread out over the wound, the one edge following margin of cornea; after noticing that graft adhered nicely, the eye was closed, and kept closed, with strip of plaster for two days. On first inspection, graft had a pinkish hue and edges were firmly adherent to neighboring tissue. In ten days the pinkish color changed, becoming white and glistening in appearance.

The second eye was treated in a like manner, with a similar good result, and patient left for his home.

I again saw patient about one month ago, when the graft presented a more opaque appearance than surrounding conjunctiva. The graft benefited the symblepharon materially, as well as added a permanent barrier which effectually stopped the conjunctiva from crossing the corneal border again.

My experience with extensive pterygia since has proven to me that skin grafting should be done in all cases when the growth has attained a size too large to enable one from using conjunctiva for the barrier between growth and cornea.

DISCUSSION ON DR. HILGARTNER'S PAPER.

DR. HODGES said the climate of Texas seems to favor pterygia. However has seen, in his experience, only one case to which he would have used Thiersch's method of skin grafting. However, should occasion arise, would not hesitate to do so. He asked Dr. Hilgartner whether sutures were used.

DR. HILGARTNER replied that no sutures were used.

DISLOCATION OF CRYSTALINE LENS.

R. C. HODGES, M. D.,

GALVESTON.

By dislocation of the crystaline lens, we would describe a condition of the eye when the lens occupies a position other than the normal one, and is removed wholly, or in part, from the patellary fossa.

The historical record of this class of cases dates from the latter part of the first half of this century. Previous to that period the majority of cases were classed as were other intraocular diseases under the general name of amaurosis. The work of Bowman, Newman, Balfour and others in England, Bernard, Desmarres, Fischer, Sichel, Von Græfe, Panas, Dujardin and others brought the subject into clearer light, and though today regarded as a most serious affection, the advances in ophthalmic surgery and improvement in asepsis in general have made it somewhat less to be dreaded both by the patient and the ophthalmologist.

Dislocation of the lens may be classed as congenital, spontaneous or traumatic, and may be subdivided into complete and incomplete. In speaking of complete dislocations, we more commonly use the term luxation, and for partial displacements, dislocation. They may be monolateral or bilateral. In bilateral dislocations the displacement is often uniform and generally congenital. Other causes are choroiditis, malignant myopia scleritis and diseases of the vitreous body. Traumatism, of course, plays a most important part in dislocations of the lens, and the most serious cases we meet with are those due to injury, owing to the numerous complications existing. Spontaneous dislocations of the lens point invariably to other disease of the eye, chiefly to diseases of the vitreous; and all luxations

are more or less due to pathological changes, or imperfect development during fœtal life of the zone or zinn, or to diseases of vitreous and high myopia. Even severe traumatism is not likely to produce dislocation without this condition existing.

Sublaxation may be in either the perpendicular or horizontal axis.

Complete dislocation may be into anterior chamber, into vitreous, or beneath the conjuntiva, and even under Tenon's capsule.

Symptoms of dislocation of the lens are in congenital cases chiefly those due to visual disturbance. Patient will give a history of imperfect vision and of monocular diplopia. Inspection reveals a tremulous iris, and illuminating by oblique light or the ophthalmoscope will show generally the nasal or the lower edge of the lens crossing pupillary space appearing shaded and crescent shaped. Accommodation is lost or greatly impaired. Glasses are apt to increase the diplopia already existing. Rays passing through the dislocated lens are often refracted too much, producing myopia, while those which pass to the side of the lens are not refracted enough and hypropia exists. When due to traumatism the symptoms may be more obscure, owing to hemorrhage into out chamber and subconjunctival injection and ecchymoses, and, on the other hand, the dislocations from traumatism may present no other lesion than the dislocation.

Complete luxation into vitreous may, in many cases, be recognized by the ophthalmoscope, and the eye is in a condition similar to that following the operation for cataract. Luxations into anterior chamber, when not complicated by severe inflammatory conditions, may be easily recognized. The lens, if opaque, is easily seen lying between cornea and iris, and, if clear and transparent, appears like a bubble of air or globule of oil in anterior chamber. Abadie uses the dorsal decubitis and a strong electric light to locate luxated lens in vitreous, and reports interesting cases which will be referred to later. Luxations under the conjunctiva are generally in upper and inner portion of ocular conjunctiva and are easily recognized. The peculiar enlarge-

ment and shape, with location, serve to guide one, even when there has been quite free hemorrhage and considerable swelling following the injury.

Prognosis is always grave in spontaneous and in traumatic luxations. In congenital incomplete dislocations the prognosis is not so grave, but should always include the possibility of future and progressive vitreous trouble, and the possibilities at any time of a complete luxation leading to iritis glaucoma and even panophthalmitis.

Dislocations into anterior chamber, if productive of no other harm, are very likely to leave permanent opacities of cornea by contact with Decemet's membrane. All authorities are agreed that when irritation follows the dislocation, that operative treatment should be instituted, and while many affirm that the let alone plan is the best, I contend that in complete luxations into vitreous or anterior chamber operative measures are not only justifiable, but indicated, and in partial dislocations where the lens is lying and dragging upon iris, it is better to operate than to leave the eye subject to trouble that will destroy it and greatly hamper any future operative treatment.

The use of lenses in partial luxations has, in my hands, proved very unsatisfactory, and generally but aggravates the visual disturbances and monocular diplapia. Operative treatment in uncomplicated cases is plain and straightforward, but it is often that we experience more trouble in meeting the emergencies that arise, than in attending to the mere technique of the operation. If in anterior chamber, a corneal incision will frequently suffice, with the aid of a lens scoop, for the removal of lens. More frequently, unless the lens is first fixed on completing incision, it will drop back in the fossa, and too free manipulation may result in luxation into vitreous out of sight and reach. If this does not occur, by the use of the lens wire loop its removal is easily accomplished.

Agnew's operation is one largely in favor, and his bident, and a modification of it by Webster, is most frequently used. The bident is passed into the eye behind the iris, at a distance sufficient

to avoid wounding the iris, and the lens is impaled, or caught, and brought forward by depressing the handle, and while held in anterior chamber, is removed in the ordinary way. In cases where there is fluid vitreous, and the lens lies out of sight and out of reach, we have the alternative of leaving it alone, or by incision introduce curette and grope for it. Abadie, of Paris, to avoid this procedure, in cases especially where vision is already lost or seriously impaired, operates as follows: The patient is placed in dorsal decubitis, looking downward; the eye cocainized and atropinized; a powerful electric light is thrown on the eye, illuminating the pupil. Well behind the celiary region he passes a curved needle with cutting edge like a pruning knife. The instrument being magnified is easily seen, and as it comes in contact with the lens, fixes it and brings it into anterior chamber; meantime an assistant passes a needle or cystotome into the anterior chamber and lacerates lens; the swollen lens remains in position, and later on is treated as an ordinary soft cataract. He reports three cases treated in this way with good results, but I do not see the advantages over the Agnew operation, as it requires two or more operations and the assistance of a second surgeon to effect what is done by the Agnew operation in one sitting.

Dr. Killen reports the results of the use of the bident in the Manhattan Eye and Ear Hospital as in every way satisfactory, and in cases not selected but taken as they come. Burnett uses, in some cases, in dislocation into vitreous counter pressure with fixation forceps while making corneal incision—a dangerous procedure when we remember the fluidity of vitreous so often existing.

In subconjunctival luxations operative measures are comparatively simple. An incision through conjunctiva is generally sufficing.

Burnett reports interesting cases. Galezowski and Mercanti, of Pavia, Italy, report interesting cases of this character.

In closing this paper, I wish to cite the history and treatment of a case possessing many points of a peculiar interest,

although the operative measures used present no novel or original character:

Anna L., age 16 years, consulted me three years ago to have glasses fitted. The vision in both eyes was defective, being only 8-200, and glasses spherical, or cylindrical, failed to improve vision. Ophthalmoscope revealed a typical case of ectopia lentis congenital, the lens being detached from the nasal side and moving somewhat with movements of the eyes. Iris tremulous, anterior chamber deep, and iris at outer and inferior portion bulging slightly forward. At this time, there being no irritation, and the case, from history given and present symptoms, being so evidently a case of congenital dislocation, I advised non-interference, but warned patient to be on the watch for symptoms of irritation or inflammation. In event these conditions arising, an operation would be necessary. On March 22, of this year, she came to my office again. She gave the following history: Several weeks (six) before she had severe pains in the eye, and after trying the various household and neighborhood remedies without relief, and experiencing a sudden and most severe exacerbation of pain, she consulted a so-called specialist and miracle worker, whose blatant advertising and published testimonials had attracted her attention. Four weeks use of astringents had not improved the condition, as you may imagine. The condition of the eye was as follows: Vision reduced to perception of light. Lid swollen and irritated and conjunctiva engorged. A prominent and extensive staphyloma of sclera so marked, indeed, as to show through lid. Cornea hazy, muddy iris, and lying in anterior chamber and pressing on and dragging down lower portion of iris the crystalline lens. Pupil contracted. The ectasia of sclera, the iritis and the hazy cornea, the fluid vitreous, all presented a formidable array of symptoms, and making the prognosis unfavorable, indeed. On March 23, the following day, assisted by Dr. J. B. Haden, Dr. Hendricks administering chloroform, I operated at the Sealy hospital. Fixation and inferior corneal incision. On completing corneal incision, the lens dropped back behind pupil. After waiting a moment, I made an iridecomy downward, and passing in small lens scoop succeeded, fortunately, in engaging the lens at the first trial. No vitreous lost and no hemorrhage from iris.

The irridectomy was made with a view of lessening the danger of loss of vitreous, and especially with the hope that the scleritis might be improved by it. Strict antisepsis was observed during the following operation. Forty-eight hours after, the wound united, conjunctiva clear and patient's recovery uninterrupted. The haziness of the cornea, due to the long contact of the luxated lens with Decemet's

membrane, persisted, although, at present, it has diminished one-half, and V=with + 6 D 20-C, and is improving each week. The staphyloma of sclera has subsided completely, leaving only the dark pigmentation so characteristic of lesions of the sclera in the ciliary region.

The points of special interest in the case are: 1, the congenital double sub-luxation, the complete luxation into anterior chamber spontaneously of lens, and the severe scleritis from this luxation, or producing it. Either condition could have been the exciting one, but as the case was not under observation until all of these symptoms were present in full, I could not say positively.

DISCUSSION ON DR. HODGES' PAPER.

DR. B. A. POPE said, "Dislocations of the lens can not be treated by hard and fast rules." He then cited a case of dislocation due to traumatism, in which the patient had received a severe penetrating wound of the cornea, which resulted in dislocation of the lens, with colo boma of iris; the lens substance swelling and filling entire anterior chamber. However, recovery of useful vision $\frac{20}{15}$, without correcting glasses, was the outcome. He objects strenuously to operation (for removal of lens). Patient's age, 40 years.

DR. SPRING said that traumatisms and luxations always proved interesting as well as undesirable cases to have on hand; however, advocates operation as most certain mode of relief, as he considered such cases a magazine likely "to go off" at any moment.

DR. CHILTON, in regard to position of lens, advises operation, and considers it urgently demanded. He regarded Dr. Pope's case as one desirable for operation, and advocated operation, especially in event of cataractous lense, when due to traumatism.

DR. HODGES said his paper only referred to dislocations of lens, and not to direct traumatism of lens.

DR. POPE, in reply to question of extent of iris involved, said that two-thirds of the pupillary margin was, and that anterior chamber was filled with lens substance soon after injury; also remarked that luxation does include rupture of capsule.

TREATMENT OF SQUINT.

R. H. CHILTON, M. D.,

DALLAS.

Operations for strabismus are made, first, for cosmetic appearance, and second, for the improvement of vision. The best method of operation, and the proper time and age, will be the object of a very brief paper.

The early correction of squint, either by glasses, if practical, or by strabotomy, has not had the proper attention, nor has it been sufficiently urged by medical men. Ferchs says: "In exceptional cases, children with strabismus gradually cease squinting as they grow up, and lose their strabismus. They outgrow their squint, but the eye that was previously deviated is left with its sight weakened, and accurate binocular vision is never restored." The eyes of these patients should be examined with the ophthalmoscope. By this something of a definite idea of the refraction is obtained; also, as sometimes happens, choroidal disease, leaving atrophic spots in the region of the macula-lutea, is found. In the latter event, any operation should be deferred. The ophthalmoscope enables one to often select glasses when the patient is too young to utilize the test types. In very young subjects, small coins, well known household articles and personal toys can be used instead, always selecting articles corresponding in size to the different numbers on the test card.

Amblyopia is found in nearly all cases of strabismus. It is not our province to say whether causative or the result of the deviation. However, from a study of the trouble, I conclude it is due, in some cases, to congenital defect, and in others is a result of the deviation. In support of the latter theory, temporary deviation may follow a sudden shock and derangement

of the nervous system, when no amblyopia exists. In support of the former, the incurability of some cases, even when carefully treated, indicates its being congenital. If it was a result of the squint, it should, at least, be improved by its correction. Be the amblyopia congenital or caused by central nervous trouble, or as a result of the deviation, if benefit from treatment is obtained, it comes from early correction, either by strabotomy or glasses. I believe the earlier the correction by operation the better, and no patient is too young, after we are satisfied of permanency of the squint, and all other means have failed.

In the event of the squint recurring in children too young to wear glasses, I believe it best to correct, even if strabotomy must be repeated. Some cases are periodical in the beginning, and are likely the result of ametropia. These can usually be relieved by glasses. But few cases are cured by glasses, and these are usually mild and associated with hyperopia.

I agree with St. John Roosa in believing that benefit may be had in a certain number of subjects, especially in periodic cases, by mydriatics and exercise.

How early in life shall we operate, and when should the refractive error be corrected by glasses? Whenever your patients are ill, you at once treat them. If a deformity occurs, it is corrected, and if surgical interference is required elsewhere in the human body, delay is a loss of precious time. The earlier treatment is applied, the better are the results. Atrophic disease of the nervous and muscular systems, get well from treatment, inversely to the time they have existed. Long standing disease of this character is nearly always incurable. In squint, the longer the opposing muscle is kept on the stretch, and weakened, the longer will it require to reestablish its power, and the less liable it is to again recover fully its former strength.

After children are at school, and appreciate acute vision, they soon learn to suppress the image in the deviating eye. After correction they are far more likely to attempt the same suppression than are younger children, who have no occasion to learn it. Therefore, in older children, the chance of perfect success in operations is not so good as in younger children.

The object of every operation is to overcome contraction or shortening in one muscle, and the restoration of power in the other; the proper fixation of the eye for binocular vision, and the relief of the amblyopia.

Those upon whom I have operated at the age of three years and younger seem to have had the most perfect results. I do not now remember to have had any difficulty in any case of very young children, though the wearing of glasses and the correction of ametropia have been, in many cases, impractical. I have had greater success from the use of mydriatics after strabotomy than before. In many cases, even when both recti muscles have been cut, we will have more or less deviation. In these cases I often use a mydriatic for months, and nearly always with benefit. If the strabismus comes on soon after birth, I would correct before the child is two years old. If it occurs later, I would correct by strabotomy whenever I was satisfied that mydriatics, change of surroundings, if in poor health, or proper muscular exercise by bandaging, would not relieve it.

In children with otitis media, we frequently have strabismus occur. In these cases it is important to relieve the ear trouble at once, and suspend the muscular accommodation in the eye. The operation which I make, and greatly prefer, is the subconjunctival method of Critchett. With the exception of extreme contraction in older subjects, I always do this operation. It is by far the best for several reasons. It is not so easy as the ordinary operation, yet it is not difficult, and only requires care. The greatest advantage of this method is that it never disfigures, as is often the case with the vertical cut.

There can be no sinking of the caruncle. Nor is there ever any appearance, as if divergent squint existed. This appearance often occurs after the old method, which leaves the eye but little improved, from a cosmetic standpoint. The wound is much smaller, and less liable to contamination from external sources. It is covered by the lower lid, and is not exposed to view or irritation.

The operation is made by making a horizontal incision about one-fourth of an inch in length, just over the insertion of the lower border of the muscle, in to the sclera, being sure to include Tenons capsule. Then, with a hook, the muscle is engaged and slightly raised and pulled forward. With blunt scissors, it is now separated thoroughly. Every fibre should be sought for and separated. Whenever the hook does not come forward easily to the sclero-corneal junction, you may know that fibres still remain uncut. It is important, in this method of operating, to sever any fibres attached to the conjunctiva or sclera, posteriorly to the main insertion, before severing the muscle from its attachment. If any fibres are attached to the conjunctiva, this operation leaves this membrane so it does not retract, and this would diminish the result.

DISCUSSION ON DR. CHILTON'S PAPER.

DR. MOSS considered this a subject of great interest, especially from a cosmetic point of view, but his personal experience was too limited to express decided views; he agreed, however, with Dr. Chilton regarding early operations to preserve binocular vision and prevent amblyopia.

DR. CHILTON said that one great drawback was that cases were not referred to oculists early and in time to prevent amblyopia, and thus give patients better chances of binocular vision. For this reason he advocated early operations. Stevens' graduated tenotomies may be good, but he preferred Critchett's.

DR. HADEN asked whether the results were good if an operation was performed on the very young. He had been taught to wait until about the sixth year.

DR. CHILTON replied that he would operate early, even if second operation was necessary for reasons of preservation of binocular vision.

DR. SPRING said the strongest argument favoring early operation was on account of atrophy of opposing muscle, caused by delay, and agreed with Dr. Chilton in operating early, even if second or several subsequent operations were required.

DR. B. A. POPE cited a case of divergent squint in which no convergence was possible. Operation on the externus and extreme traction

in opposite direction by guy attached to conjunctiva of eye and held fast by running around ear of opposite side, and subsequent operation on externus of fellow eye resulted in perfect binocular vision with converging power. This case dated from early childhood, and was operated on in the patient's twenty-third year.

DR. MOSS inquired if both eyes were divergent.

DR. POPE replied that only one.

DR. MOSS asked what was the vision in the divergent eye.

DR. POPE—"Amblyopia."

DR. CHILTON said that De Wecker's operation accomplished the same result.

DR. HALL remarked that text books tell us not to operate early; the objects being: 1, to restore binocular vision; 2, cosmetic effect. When binocular vision is once established, muscular equilibrium should be attained. Regarding age for operation, he agreed with Dr. Chilton, and found from experience that the best results in cases of the young. Dr. Stevens' method applied, and frequent operations, done at intervals of one or two months, prove preferable and highly successful, since the exact muscular condition could be obtained.

DR. POPE said he would like to know the relation between muscular condition and binocular vision, especially in extreme cases where suppressions of image existed and where operation would prove accountable in obtaining binocular vision (cites case of divergent squint).

DR. HALL said he frequently operated in cases of convergent squint in which one eye looks higher than its fellow, which indicates involvement of the superior rectus muscle, which condition is only removed by operating on the muscle concerned.

DR. HILGARTNER said that during his service in the Presbyterian Hospital, Baltimore, he had seen cases where early operation on convergent squint resulted later in extreme divergence, and advocated the wearing of glasses for correction of visual defects in squint of the very young, for in his hands this method proved efficacious, and does not advise operation in young children.

DR. CHILTON, in closing the discussion, held that operations made early prevent subsequent divergence. Does complete severence of muscle, and desires divergence. He advises the wearing of correcting glasses in all ametropic cases, and emphasizes the statement of operating early, especially when too young to wear correcting glasses. Prefers to operate several times rather than delay for reasons of preserving binocular vision and convergence.

DR. HILGARTNER replied, further emphasizing results seen in which extreme divergence was the outcome as a result of the operation on the young in vogue for many years.

SECTION ON DERMATOLOGY.

REPORT OF CHAIRMAN, R. W. KNOX, M. D.,

HOUSTON.

It is not my purpose to take up the time of this association with a didactic lecture on skin diseases, or to follow the beaten track as to treatment, etc. It will be my aim to give only a short review of the more recent theories as to the cause of certain skin diseases, with the pathology and treatment of same.

Standing out prominently, and above every other question in connection with this subject, at the present time, is the fact that many of the skin diseases, the aetiology of which was formerly unknown, are now attributed to pathogenic bacteria. In this relation I will discuss a number of diseases.

Cancer—Of late years the subject of cancer has attracted an unusual interest among the world's best pathologists. This direful malady, as we know, is one of the greatest scourges of humanity, and one whose virulence nothing has been able to abate. No remedy except early excision has been known to check its progress, and we all know how often this fails. Is it any wonder, then, that this disease, which numbers its victims in every country, among the thousands and tens of thousands, should be known as the shame of medicine and the scourge of humanity?

In my report on dermatology, at the last meeting of this association, mention was made of the fact that Dorier had discovered peculiar cells in Paget's disease, known as psorosperms. He reported the discovery to the International Dermatological Association, which met in Copenhagen, in 1889. Some time after this, a number of observers reported having found similar cells, which they thought to be the organisms of cancer. The

discovery, however, was discredited and fell into disrepute, by some others claiming that the bodies found were those of a degenerated epithelium, which had undergone horny degeneration. This was thought plausible, from the fact that inoculation experiments on animals produced negative results.

Another point against the microbic theory was, that all other known bacteria which gave rise to a new growth, through inflammatory action or otherwise, produced tissue similar to that in which it was inoculated or happened to be found. In other words, the cancer bacterium, instead of causing a homologous, had caused a heteroplastic growth. New aid, however, has lately been received in the person of Prof. Metschinkoff, of Paris, and a Mr. Clarke, of London, as well as a number of other equally distinguished men. The former, in a recent article for the British Medical Journal, treats the subject very fairly, and concludes that cancer cells, without doubt, contain parasitic bodies. He thinks the parasite a protozoon closely resembling the cocciden found in diseased rabbits. Nothing more has been proven than that these organisms exist in cancer cells. The life history, mode of development, etc., is entirely unknown. The fact that these bodies exist as living organisms marks a considerable advance in the pathology of cancer, and it may yet be proven that they are an aetiological factor.

A society has been organized in Paris, France, called the anti-cancer league. They call upon all who are interested in the subject to assist them with clinical notes of cases, original investigations, etc., the purpose being to arrive at some definite conclusions by a concert of action.

Lupus—Next to cancer, we find that the disease known as lupus has occupied a prominent place in recent discussions both as to its pathology and treatment. Most observers regard it as an external tuberculosis of the skin, and base their opinions upon the fact that a great many patients affected with lupus die of general tuberculosis. Others claim to have found the baccillus tuberculosis present in lupus tissue, and were successful in inoculation experiments on animals. All agree that

the number of bacilli is small, and sometimes impossible to find. So great an authority as Hebra thinks the disease is sui generis, and while admitting the occasional presence of the tubercle bacillus, attaches to it no aetiological significance. The treatment so widely heralded by Dr. Koch was based on its tuberculous character, and we all know how signally tuberculine failed to be of any real diagnostic or curative value. Antiseptics of all kinds have been suggested on account of the supposed germicidal origin, but nothing short of absolute extirpation, either by the knife or caustics, has been of value in effecting a cure. The granulating surface left after destruction of the tumor has been rapidly healed by Thiersch's method of skin grafting. This latter procedure marks an epoch in surgical progress, for by its aid much is now being accomplished which heretofore has been thought impracticable. It is used to cover slowly healing surfaces left after the removal of all kinds of growths, whether benign or malignant. By its use after severe burns the disfiguring and contracting cicatrices are avoided. Specific ulcers will heal after treatment by this method after being properly prepared. The grafts are also used to cover the raw surfaces necessarily made in the correction of congenital deformities. The profession had hardly recovered from the disappointment occasioned by the failure of Dr. Brown Sequard's testicle juice before it is asked to seriously consider the use of the thyroid gland of the sheep for the cure of myxœdema. This disease, while not usually included in works on the skin, may very properly be discussed in this connection. The malady is rare and peculiarly disfiguring. Two years ago it was thought to be incurable, but if we may believe the reports from the clinical society of London, the new method of treatment has been attended by the happiest results. The idea seems to be to supply the patient with a sufficient quantity of thyroid gland, it makes no difference in what form, and the unfortunate sufferer starts on the road to recovery. According to reports, the treatment has exceeded the most sanguine expectations. The disease is not often met with in the United States, although I

learn that at least one enterprising pharmaceutical house in this country is now supplied with thyroids in abundance in the shape of extracts and powder of same. The dose is 3 grains, equal to about $\frac{1}{8}$ of an ordinary gland, and this amount is given every second day.

Eczema—No report in dermatology will be complete without some reference to eczema. The aetiology of this disease is almost as far from solution as when, years ago, Mr. Wilson thought it was due to some kind of assimilation or nutritive debility. Not many observers are satisfied with the theory of Nunn's "Dermatological Flora" as a cause of eczema, although the disease might furnish a fruitful soil for the development of such organisms. This fact will probably account for the successful treatment of eczema by such agents as are known to be destructive to germ life. Nothing would probably be more pleasing to a healthy microbe than to find lodgment in an acute eczematous eruption. On this account, probably, we find that the most successful treatment for sub-acute eczema is the use of the blandest antiseptic ointments, with absolute exclusion of air and water, together with suitable constitutional remedies.

There is no disease whose local manifestations present a more protean character, and whose treatment requires a greater variation, according to the nature of the individual case.

Besnier has said that he who would best treat eczema in general will be he who will analyze, with the most solicitude and attention, the conditions presented by each patient, and will know how to rectify his hygiene and correct whatever may be faulty in his organs or their functions.

I think the majority of failures in the treatment of eczema are due to the want of personal attention on the part of the physician, and his failure to carry out the treatment in detail.

As for the remedies in eczema, their name is legion. The chemist's wand, with its magic touch, has proven a veritable Aladin's lamp, and has brought to light, from ordinary coal tar and iodine, substances of wonderful efficacy in the treatment of disease.

If the present state of affairs continues, the materia medica will be the most voluminous of our medical volumes. We are so constantly being beset by new remedies and new preparations of all kinds, that we have hardly time to examine one before another of greater reputed value is called to our attention. Some of them have undoubted merit, but it will take time to separate the wheat from the chaff. Suffice it to say, no specific for eczema has yet been found, and the treatment will continue to depend not so much upon what remedy we use, as how we use it. Lately, some writers have made mention of what they are pleased to call reflex eczema of children. This disease is found upon the exterior surfaces, and is usually associated with a neurotic temperament. A recent writer has tabulated some thirty cases, and found local treatment of no avail until some point of irritation was found and removed. In quite a number of the cases an adherent prepuce was found, corrected, and the disease at once disappeared.

Erysipelas—Some attention has of late been given to erysipelas on account of the peculiar nature of its microbe. It appears to have been demonstrated that this organism is almost identical with that of suppuration, possibly different varieties of the same species; that it sometimes causes pyæmia or septicæmia, and again erysipelas. Inoculation experiments with this coccus in rabbits caused fatal septicæmia or erysipelas, according to the virulence of the poison. It was discovered that the microbe was capable of being attenuated in proper cultivations, and then only mild forms of erysipelas are produced by inoculation. Dr. Klein, of Berlin, was the first to call attention to the use of ichthyol in facial erysipelas, and claims for it a specific action. There is no doubt that this remedy, in connection with lanoline or vaseline in the proportion of 1 to 2, is a most efficient application in the disease. The lanoline is preferable on account of its greater penetrating properties. This treatment is certainly an improvement on iodine, and not so disfiguring to the face.

Prickly Heat—As this subject of will be one of interest to

most of us in a very short while, I will say a few words in regard to the theory held by Dr. Pallitzer and lately published at some length in the Journal of Cutaneous and Genito-Urinary Diseases. His idea, succinctly stated, is to the effect that the rapid perspiration of summer renders the skin less oily and allows the epidermic cells to absorb an excessive amount of moisture. When the cells are in this condition, the sweat ducts are occluded by mechanical pressure, and inflammatory action results. He instances the fact that those who bathe most frequently are the greatest sufferers from prickly heat. He suggests as a remedy the inuncture of the body after the bath with some fatty substance, and prefers lanoline with almond oil.

The treatment of skin diseases is now largely based, as before mentioned, upon their ætiology. The discovery of parasites and parasiticides are keeping somewhat of an equal pace. Among the newer remedies that have found favor, some of them tested by several years, may be mentioned aristol, resorcin, glymol, dermatol, fuschsine, pyoktanin, europhen, ichthyol, hydrogen peroxide, creolin, iodol and losophan. I have found that neither the phenol nor the iodine preparations contained in the above list are suitable for eczema or other disease in its acute inflammatory stage. Their action is better adapted to a sub-acute or chronic condition. For several years aristol has been largely used as a substitute for iodoform, and has proven valuable both as an antiseptic and germicide. The odor is by no means agreeable, but a considerable improvement on iodoform. It adheres readily to wounds of all kinds, and is valuable as a citatrizing agent, especially in specific ulcerations. Resorcin is indicated in the same class of cases, but is more valuable as a deodorant, and especially so in malignant ulcerations. Cases of complete cicatrization have been reported as following its use in epithelioma. It is also used locally in erysipelas, psoriasis and lupus. In ring worm and other parasitic diseases it has been found valuable. For the past five or six years I have used it as an injection in gonorrhœa in the proportion of 1 dr. to 12 ounces of water, and although it does not always cure, I have found no other remedy to act so well.

Europhen and losophan are both iodine preparations, and are valuable in the treatment of ulcers and microphytic diseases. Europhen has a slight odor, somewhat resembling iodoform, and seems to be the best substitute for the same. In the proportion of 10 grains to the ounce of vaseline, it makes a valuable antiseptic dressing. It is a much lighter powder than iodoform, and does not require so much by weight to cover the same surface as the latter.

Fuschsine is one of the analine dyes, and has been found superior to pyoktanin in the treatment of foul ulcers and malignant growths. Dr. Elliott has lately written a paper on this remedy in the Journal of Cutaneous and Genito-Urinary Diseases, and recommends it very highly in Paget's disease of the nipple. He uses a 10 per cent alcoholic solution, and claims several cures. Dr. Fox finds no remedy to act so well in ringworm of the scalp. No more valuable agent has been added to our list than hydrogen peroxide. It is especially useful in all diseases attended by a formation of pus. It combines the properties of a deodorant, antiseptic and disinfectant. It produces no pain, has no odor and may be freely used. As a pus destroyer, it has no equal. It is said to be valuable when used as a spray for the sting of insects.

Shoemaker recommends a 10 per cent oleate of copper as the most reliable of all germicides, and regards lanolin as the best base for all such preparations. The latter bears an animal fat, is much more readily absorbed by the skin than vaseline or other mineral oils.

In closing this report, I wish to refer to massage as an auxilary to the treatment of skin diseases. Shoemaker claims that it is a treatment that has not been given the attention it deserves. For by its action the general health is improved, increasing not only the activity of the skin, but almost every other organ as well. To use his own words: "In chronic cases of eczema, where the intigament is deeply infiltrated, rough, thickened, even, to a leathery state, hard and dry, upon which medicine has been used without any result, the application of

massage breaks up the exudation, stimulates the absorbents, removes the inflammatory products from the parts and restores them to the natural condition."

In conclusion, I would state that, notwithstanding the fact that our attention is constantly being called to remedies that are destructive to germ life, our treatment should, in the main, be directed more to the regimen and hygiene, with a view of building up the patient and making the soil unfit for the development of pathogenic life.

ACNE.

F. E. DANIEL, M. D.,

AUSTIN.

In its general pathology, acne is an inflammatory disease of the sebaceous glands and follicles, involving a vitiated or deranged secretion. Normally, the secretion is a fatty fluid, and its function is the nutrition and lubrication of the hair and the skin; though this last assertion is disputed by Vielle, of Cronstadt, who limits its function to the former alone.

The disease is usually met with either as a pimple, a papule, a pustule, or it may be tubercular, and the points are more numerous on the face and back, the forehead, cheeks and nose being the favorite sites, because more numerously supplied with sebum glands; and in young people, of both sexes, though it is not always confined to those parts, nor limited to any age or either sex. Acne is a folliculitis, essentially, and is associated, in most cases, with comedo and seborrhœa, (s. oleosa and s. sicca), at least they nearly always coexist. It is due to the drying of this secretion, and its retention within the duct, from what cause, we will presently inquire.

Acne is one of the commonest of all diseases. It is reasonable to say that scarcely one person in a thousand but has it, in a more or less aggravated form, at some period of life, usually in their youth.

When we carefully study its etiology, acne becomes a subject of much interest, worthy of the attention, as it often taxes the skill, of the ablest practitioner. Considering its almost universal prevalence, the pain, inconvenience and disfigurement often attending it, and the fact that it is, according to some of the best authors, symptomatic of pathological conditions both difficult to diagnose and treat, it is a little singular that it should

receive so little attention at the hands of the general practitioner.

Nothing is easier than a diagnosis of the eruption, there being but one disease, pustular syphilide, from which it may not be readily differentiated. In the opinion of most recent writers, it is not merely a local disease, as was once supposed, judging from the fact that generally it disappears after several years without treatment, and that a cure is sometimes effected by local treatment alone, but has its origin in, or at least is intimately associated with, deranged digestion, or undeveloped, deranged or purturbed sexual function. Piffard, Fox, Morrow, Shoemaker, Robinson and most other writers, observing that the disease almost always begins about the time of puberty, and disappears spontaneously on the attainment of maturer years; that it is frequently associated, in some obscure way, with the menstrual function; that it is very common with those who masturbate, naturally assumed a connection with the generative function. It has been known to make its appearance abruptly and in violent form, at the menstrual period of young women, and to disappear as abruptly upon the establishment of the flux. The writer once had in his clientelle a young woman in whom an outbreak of acne on one cheek was an invariable precurser of her menses, and which, when the flow came on, would disappear. When she had married and became the mother of children, the eruption, while not so constant as before, attended any little delay or derangement in her catamenia. Piffard and other writers say the eruption is a reflex of uterine, gastric or intestinal trouble. Morrow says that he is satisfied that we should look beneath the surface for the cause, and that it will be found in the direction indicated above.

At any rate, the eruption makes its appearance, in the great majority of cases, at a time when the entire glandular system takes on increased activity; and doubtless many cases are associated with deranged function, as claimed; but there is reason to believe that some cases are not. Denslow assumed a kind of atony of the muscular elements of the glands and their ducts,

from distention of the walls by the comedo-plug, or by general impaired health, as in anaemia or chlorosis, and also associating the eruption in some way with uterine derangement, prescribed ergot and with good results.

From the foregoing considerations it will be seen that, while any one may recognize the eruption almost at a glance, a diagnosis of its aetiology, and, consequently, a rational treatment, is quite a different thing. Dr. Fox, in his excellent work, says: "To correctly diagnose a case of acne, as to its aetiology, requires a high degree of diagnostic skill; and to cure it, an extensive knowledge of general medicine."

The immediate cause of the eruption is a mechanical closing or obstruction of the mouth of the efferent duct of the sebum follicle and consequent retention of its contents, which, from some cause, variously assigned, becomes inspissated or hardened, said to be from imperfect elaboration. This obstruction may be epithelial scales or an accumulation of inspissated sebum, as in seborrhœa sicca in the less exposed parts; or, as Behrens has pointed out, the fullness and distention of a number of glands, and the consequent infiltration of tissue may close the mouths of other ducts in the vicinity, and thus create new papules. I am satisfied that acne, nearly always associated with comedo, is frequently developed by its presence and pressure. Whether this inspissation of the sebum be caused by derangement in the function of the glands, atony of the walls of the follicle duct, or from the presence in the duct of lucuna hairs, as Morrow says, we do not know. We observe that the secretion, instead of flowing out, becomes hardened, resembling tallow, and is retained within the duct; that its presence excites inflammation, and the pimple or papule appears as a small white speck on an inflamed and somewhat elevated base. Were the mouth of the duct not obstructed, it would, in my judgment, be a comedo instead of an acne papule; this being the relation between and the only difference in them. With the mouth of the duct open, the exposed surface of the in spissated sebum becomes blackened, either from dust, dirt or

from atmospheric influences. The duct being obstructed, inflammation sets in from mechanical pressure, and it may run a brief course, and, on emptying the contents, disappear by resolution; or, it may become a pustule, and the gland and follicle and duct become obliterated. This form, if neglected, results in a hardening from hyperplasia and infiltration, and it constitutes the form of acne known as acne indurata—an almost incurable and very disfiguring malady.

The laity call these comedos black-heads, and believe them to be worms. While the acaris-folliculorum, or demodex folliculorum, or steatozoon, as some call it, is frequently found in the sebum, it is thought to bear no relation to its cause. Some contend that it may be a factor in the suppurative process, while others hold that it is a product.

Acne is defined to mean the "vigor of life." This is clearly a misnomer, inasmuch as we often, perhaps most frequently, see the disease, and in an aggravated form, in anaemic and even chlorotic females; though in many cases it is seen in those who have a red skin in which the sebaceous secretion is abundant, and generally, as stated, about puberty.

Authors make a great many varieties of acne, which is simply confusing. The cases we see are, in my judgment, degrees of the same thing, or, as in acne indurata, the result or effect. They all have a common origin, *i. e.*, development, caused by obstruction. The so-called "acne rosacea" is not acne, but a distinct disease, having a different aetiology, and requiring a different treatment.

Treatment—From the foregoing observations it will be seen that there is no specific treatment for acne, nor will one line of treatment cure every case. In some, nothing is easier and simpler than the cure. Perhaps a few applications of some mild astringent wash will effect a cure, without any internal medication. Again, treatment addressed to the relief of deranged digestion will relieve the eruption without local treatment. Again, all treatment will fail, or, if the eruption be gotten rid of, will return; but generally, both internal and exter-

nal (local) treatment are necessary, and they often require to be long continued. The internal treatment, to be rational and effective, must, of course, be based upon a correct diagnosis; hence, every case must suggest its own peculiar treatment, speaking in general terms.

Some authors say that errors in diet cause acne; that certain articles, especially fried fats, pastry, etc., and more particularly alcoholic excesses, are potent factors in producing an acne eruption; but Viele, of Cronstadt (Ziemssen's), says these things have no more to do with it than anything else, while Shoemaker lays great stress upon it.

The physician is, therefore, thrown upon his own judgment as to regulating diet, since the authors disagree. There is, however, abundant evidence to establish the causative relation of alcoholic intemperance with a form of acne met with in old or middleaged men addicted to drink.

The treatment of acne as it is usually presented to the physician, the most common form—acne simplex or acne juvenilis—which we generally see in young persons of both sexes in the papular stage, must be twofold: Local applications and internal remedies; and in the pustular stage, where there is matter shut up in the follicle and the pustule appears as a miniature boil elevated and inflamed from obstructed ducts, surgical interference is necessary. It is best to puncture each pustule with a very narrow, sharp pointed instrument, and with a soft rag wrapped around the finger and thumb to avoid bruising the inflamed tissues, the contents should be gently pressed out. This will be the sebum plug, mixed with more or less pus and blood and epithelium scales. The inflamed spots should then be encouraged to bleed. This can best be done by the application of hot water, as hot as can be borne, applied with a soft sponge; afterward, the application of soothing and astringent lotions. I say lotions because salves or other greasy matter is objectionable in cases where the acne is complicated, as it often is, with seborrhœa oleosa. In the latter a mild alkaline wash is better; it emulsifies the fat, softens and causes to be exfolia-

ted the epithelium, with the shedding of which a smooth, healthy surface is found.

But if nothing be done to remove the real cause of the eruption, there will surely be a relapse; other crops of the pimples will come faster than they can be cured. If, therefore, the cause is supposed to be deranged digestion with constipation, the remedies should be addressed to this condition. For this purpose I know nothing better than the so-called pil lapatica, made by Sharp & Dohme. It consists of aloin, strychnia, belladonna and ipecac. Or, in cases complicated with defective nutrition or with anæmia, the maltine preparations, with or without pancreatine, pepsine or iron, as the condition of the case may suggest. Some cases are met successfully with the hypophosphites, or, if it can be borne, cod liver oil. Dr. Dinslow prescribed half dr. doses of fluid extract ergot in cases where he attributed the retention of sebum in the follicle to muscular insufficiency.

Of the local applications, the choice may be made from a very extensive list, for I believe almost everything has been tried or recommended. It should be borne in mind that where there is a tender skin, and much irritation exists, only the most soothing applications must be made. Oxide of zinc and cold cream is good; or a weak wash of borax and rose water. Also, remember that alkalies act on the corneal tissues directly, by the abstraction of water, softening and causing to exfoliate the epidermis, more or less, according to the strength of the application; or even as a caustic, which may make matters worse. They should not be used except in dry, rough, or very greasy skin, where it is intended to remove the cuticle, unless in a very mild form. This can be secured in many excellent toilet soaps. Hebra's lotion is unnecessarily strong, yet there are cases in which it can be used with advantage. In an average case, lac sulphur in rose water, or in alcohol, or, preferably, ether, with or without a little glycerine, makes an efficient wash. If a weak alkaline wash be indicated, and it is, in many cases of rough, greasy skin, the salt of tartar (carb. pot.) or carb. soda may be used. Borax has the advantage of being

harmless, and is adapted to many cases. The exfoliation by a slower process may be brought about also by acids. Dilute acetic acid, or slices of lemon, have given good results. These latter are favorite remedies for freckles and liver spots, (cloasmata) the pigment, which is the prickle-cells in the second corneal layer, coming away with the epithelium.

In the pustular form of acne, sulphide of calcium in small doses, as recommended by Ringer, the more acute the inflammation the smaller the dose, (1-4 to 1-20 gr. ter-die.) is a valuable remedy. In chlorotic girls, cod-liver oil, iron, or other tonic and nutrients will suggest themselves.

Ordinarily, and in mild cases, dilute alcohol or cologne water, or a weak wash of Tr. benzoin will be found useful. It is well, also, in certain cases, to use a flannel or a flesh brush, which will bring away the dead or shedding epithelium, and leave a healthy surface. Ellinger recommends sand or pumice soap to stimulate glandular activity. At any rate, means should be employed whereby any obstructing element, such as dirt, or epithelial scales, or accumulated sebum crusts, etc., may be removed; and, finally, the free use of good alkaline soap may have a prophylactic action in case of excessive oleaginous secretion, something not fully appreciated by some persons. It is unnecessary to add, that any impairment of the general health, other than already mentioned, should have careful attention. It has often been observed that, upon the restoration of the general health, where impaired, either a spontaneous disappearance of the eruption takes place, or it yields to very simple treatment.

It is well known that many drugs, given internally, will produce an acne-like eruption. It would be beyond the scope of this paper, however, to enter into either a description of this artificial acne, or its differential diagnosis or therapy.

Regarding the relative frequency of acne in the sexes, one would suppose, from its admitted connection with the uterine function, menstruation, pregnancy, etc., that it would predominate in females; but Kaposi found it most frequent in males.

Ziemsen says, in the German clinics, it predominates in males after puberty; in females, before puberty; while Wilson found it most in females, and all observers record the immunity of eunuchs. Auspitz observed acne to very often follow variloid.

Authors differ also, radically, as to treatment. One says laxatives and so-called blood purifiers do no good; often make matters worse. Pancoast, according to Shoemaker, prescribed a blue pill, or other mercurial, if the tongue be coated. Shoemaker also emphatically condemns all soaps, and recommends the oleates, especially the oleate of lead or that of mercury; and my own experience is in accord with his observation with regard to the latter, a 25 per cent ointment of the oleate of mercury being very efficacious in many cases of acne simplex.

A simple treatment, very highly recommended by Robinson, consists of bathing the face night and morning with water as hot as can be borne, and allowing it to dry by evaporation without the use of a towel, the theory being that upon evaporation the blood vessels of the skin contract. A similar plan is to steam the face. Resorcin has been found too irritating. Ichthyol has disappointed the profession, notwithstanding the dictum of the great Unna. Lanolin has been relegated to the attic, despite the push given it by the trade. Corrosive sublimate in solutions of various strength is much used and much lauded. It is, however, a dangerous remedy, and should be used with great caution, not only because of its poisonous nature, but because, with the exfoliation which it produces after repeated application, it is very apt to leave a pigment deposit, such as you see sometimes follow a mustard blister, or that produced by iodine, and, in my opinion, it should never be used on the face unless in a weak solution, and then with caution.

A lady came to me from a distant city, introduced by one high in social life. She had liver spots, as she said (cloasmata), and being a spinster—commonly called an old maid—she was more than ordinarily sensitive as to the disfigurement. It caused her great mortification. I prescribed corrosive subli-

mate in a solution—2 grains to an ounce of diluted alcohol or cologne water—and directed her to wet a strip of linen and apply it to the spot, which was on her forehead, cautioning her to let it remain not more than an hour at a time. I presumed she reasoned as did my ward master on a certain occasion. I had instructed him to give one pill every three hours during the night, and he counted how many doses would be required and gave them all at once, retiring to his couch with the consciousness of having done a wise thiug, for, if one pill will do good, five pills ought to do more good. This lady was so anxious to be rid of her disfigurement that she soaked her handkerchief in the solution and bound it to her forehead and retired. Next morning her forehead was a solid blister. What is worse, when the blister dried up and peeled off, the entire surface was a shade darker than the spots had been.

I never saw the young lady any more, but—I heard from her.

PRESIDENT'S ADDRESS.

J. D. OSBORN, M. D.,

CLEBURNE.

LADIES AND GENTLEMEN, FELLOWS OF THE TEXAS STATE MEDICAL ASSOCIATION: For twenty years and more your retiring president has delivered an address before all who chose to listen, choosing for his subject whatever seemed to his ideas and taste most agreeable. If it were possible, nothing would be more palatable to my taste than a suggestion from you that this cup might pass from me untasted. Such not being the case, I feel like presenting you an essay upon the current events in medicine, and stating in the outset, "I have gathered me a poesy from other men's flowers, naught being mine save the thread that binds them." But each of you are as well posted as I, if not better, and so I abandoned the idea, and reluctantly went to work to dissect a subject upon which I could talk.

First before my vision flashed the subject of "Life," but hardly had the salient points presented themselves, when the vision was dimmed by an overpowering recollection that this same subject had been too masterly presented at our Waco session for me to even attempt to rivet your attention.

Delving again into the mysterious realm of thought, there came beautifully prominent the pleasing subject of "conservation of force," but like the morning mist, that vision was soon dissipated, for I remembered how I had hung, with rapture and delight, upon the burning words of bewitching eloquence upon this very subject at our Fort Worth meeting.

Once more into the realm of thought, and was pleased to find so interesting a subject as "American Medicine," but at once

there arose before my mind a grand monumental shaft that was builded for it at our Dallas session, the glorious memories of which will ever cluster in my mind, as I saw everything rich in all that is great, grand and good, thrown around it to beautify and embellish. Then, in the confusion of thought and the innumerable mass of subjects, I eagerly grasped at evolution, as upon this grand study my ideas would surge forward, I could dimly mark out a great address for you, was, in fact, beginning to reason with you upon this important matter when it began to sound too familiar, a rehearsal of something I had heard, and it was but a few minutes before I located it, and well remembered in what a masterly manner you had been feasted on the subject at our Belton session. Here, doubt, uncertainty, fear, seized upon me, and I cried aloud: "Where am I to turn, how get something different—something new?" Just then, what I thought my guardian angel, whispered: "Write upon 'State Medicine and Public Hygiene,'" when, aghast, I cried: "Down, thou little tormenting Nemesis! How could I interest anyone on this subject, when they had so recently listened to so thorough an essay on this very subject at our San Antonio meeting, where we were told that hygiene had kept pace with the great march of improvement in the scientific world, and the human family benefited beyond estimation by the discoveries of such spirits as Pasteur, Koch and Lister? How, by the wise administration of quarantine and sanitary regulation, and the proper regulation of commerce, we are able to exclude all the terrible scourges from our sunny land, yea, from all our shores, although their length and greatness is far more than any other civilized nation's."

Then, still in this labyrinth of uncertainty and doubt, it occurred to me that I might speak upon the subject of Medical Education, but was met with the stubborn fact that it would be useless for me, a man fresh from the busy cares of life, to give my ideas about education to many of my audience who make it their duty to educate. Possibly, then, a short discussion on the higher education of women might be entertaining, but, upon

reflection, this, perhaps, would shock the vanity of the female portion of my hearers, who, probably, think it would be impossible for them to be more highly educated than they are, and my inate modesty necessarily deterred me from drawing any invidious distinction between the learning of man and the acquirements of woman. We doctors, of all men, know it is far more pleasant to praise our gentle sisters than to scold, and we, of all, appreciate their work, and are proud to record their aspiration for a place in our ranks. The sweet smile and laughing eye of woman is a greater incentive to our work than finances.

Here the spirit of desperation seized me, and the subjects of civil government, music, painting, literature, love, religion, each came up for criticism as to its fitness for my theme. I gasped at the idea that I might entertain you by discussing some branch of civil government, but I remembered that some of our most learned members were great politicians, and were fully alive to the subtreasury and other plans proposed as a solution to the perplexing questions of political economy, and, of course, such a discussion before this audience would be barren of results.

After all this worry and thoughtful exploration in the various departments of knowledge, this intricate maze of scientific subjects, I reluctantly abandoned any and every idea of a scientific subject, and feeling my total inability to cope with others in these fields, I brought myself down to a level of plain, practical subjects, and this evening for a few minutes will endeavor to interest you on the subject of the Code and our duty to the younger members of the profession.

Our Code of Ethics is looked upon by the masses as a safeguard thrown around us by ourselves to protect us in our conspiracies, and that our medical societies are organized to carry out the work of conspiracy against them, and they feed upon these morbid prejudices until they work themselves into a feverish mob against all such proceedings, and are ready to do violence to those of us who stand by the Code and fight under its banner against their ignorance and prejudice. This should

not be so. We should endeavor to instill into their dull minds that our Code is our law next to the Bible, and that by it we govern our actions to our professional brothers, and by it our patient's interests are protected, and by it a protecting arm is thrown over the public; that in it lies their safety and protection as well as ours; that in fact it is our constitution and by-laws, by which a great army of men are guided, protected, shielded from the merciless rage, hate and envy of unscrupulous persons, who would not only seek to destroy our honor and dignity, but to destroy the peace, happiness and prosperity of the general public. The Code of Ethics could be dispensed with if all men were born gentlemen. Unfortunately it has been ordained that different classes should be thrown indiscriminately together in the busy clash of life, and we can no more select gentlemanly born doctors than we can lawyers, merchants, bankers or ministers. Then just here comes the crying need of the Code. Each and every class have their laws governing them just as we have, and yet we are blamed for it every day.

If we refuse to meet one who does not subscribe to our Code, the cry goes out "persecution," and soon the sympathy of the ignorant, and often those who should reason and think correctly, goes out to the one who should be ignored, and the Code is abused, and we are abused for not affiliating with the "persecuted." The trouble just here is that we are often guilty of giving way to a spirit of jealousy and rivalry, and allow the feeling of the man to overrun the spirit of the physician—thus engendering the relationship of a family physician and friend and making an enemy, losing the love, affection and esteem of a long tried and true family.

This is all wrong. Reason should be brought to bear upon the case, the subject carefully handled, and always an honest statement, let the consequences be what they may. Jealousy should be killed, throttled, and only a just rivalry permitted to sway action.

To do away with these prejudices, we must bear in mind that

there is a certain air of mystery in and about our profession, and we must explain away all the doubts and uncertainties, proclaim our high calling and our duty to our profession first, then to the public, and soon this uncertainty, this doubt as to the workings of the Code, will be cleaned up and our position seen in a clearer atmosphere, and the ignorant, selfish pretender can not long hold up, and we will see our banner—the "red cross banner"—floating proudly in all classes of society, and the true doctor—the faithful, conservative physician—will be the only one recognized, and the pretender hooted by society and abandoning his art and trickery for something that he can gull the public with. Already the older heads in the profession are looking backward, and mark the changes that are taking place. They gladly welcome the oncoming workers, who, with manly and energetic strides, are placing new laurels upon the altar erected to true and unselfish medicine by their unswerving devotion to the Code as handed down to us.

The true physician should have his mind imbued with the greatness and the sacredness of his mission. His conscience is the only tribunal by which his acts of carelessness, ignorance and neglect can be judged. The importance of his ministry should never be overlooked, for upon his skill and faithfulness, his firmness, his promptness, depends the health and lives of those who place in their keeping the very citadel of life, home and happiness. The true physician avoids, as he would the deadly upas, anything that savors of empiricism, yet he should at all times be ever brave and ready to point out the danger that arises from the dread disease, whether it be in form of some insidious poisoning sapping the life centers or the approaching visit of the unseen, which we all so much dread, and which we have fought with all our best efforts to ward off.

Then when that duty is done, he can better alleviate the pain and soothe the mental anguish. This service is of high and liberal birth, a moral duty, independent of and far above all pecuniary conditions. While our Code teaches the physician such imperative rules, we recognize the importance of the du-

ties that we ought to have and expect from our patients. In every trade or occupation men rely upon the best taught and best informed for information and sound advice. Then should it be of the greatest importance to select one in our profession who has been diligent and careful, painstaking, studious, who has by every means prepared himself for his calling, and then, with all confidence and candor, place himself and family, with their peculiarities and predispositions, confidingly in his keeping. Having thus made his selection, the physician's interest and confidence he at once enlists, and the family secrets and maladies are safe with him as friend and adviser, for the physician is under the strongest obligations of secrecy. The patient, then, ought, yea, must be obedient and prompt in aiding and carrying out the instructions given, never using his own judgment against the opinion of his physician; must follow with exactness the course prescribed, allowing no officious interference to interfere with the routine marked out, however simple the directions may appear. Patients should, if possible, consult the comfort of their physician, for be it known we have to make many sacrifices of comfort, ease and health. If possible, he ought to try to regulate his wants to the time of the physician so as not to interfere with other engagements, and by all means be prompt and ready to receive the calls so as not to inconvenience him by unnecessary waiting. Often it happens that the patient wishes to change his physician, dismiss him from the case. This can be done pleasantly, and justice and common courtesy require that reasons for so doing should be given. And then again, the patient should not unnecessarily call upon his physician during his hours devoted to rest. Then again, the patient should entertain a just and enduring sense of the value of the services rendered him by his physician, for they are of such a character that no mere pecuniary acknowledgment can repay or cancel them. Then again, the patient should always remember never to send for a consulting physician without the express consent of his own medical attendant. Consultations are of the greatest importance, and

result in much comfort, and no true physician will neglect to seek one, with the gravity of the case fully appreciated by him, and they are productive of great results.

We have spoken thus freely of the duty of physicians to their patients, and the obligations of patients to their physicians, that it might serve as a prelude to our theme—the duty of physicians to the younger members of the profession. In order to accomplish this, we issue a cordial invitation to all regulars to join us, and we welcome the young men right royally, and if we would, or could, at all times feel and act as on this occasion, there would not have occurred to my mind the thought of this kind of essay, but alas! soon our rejoicing, our festive meetings are over, numbered with the past, and when we separate and take up again the warp and woof of our work, we grow too careless, too sordid, too selfish, and too often feel toward the younger members, a jealous, vainglorious, overbearing disposition. This is not as it should be. We should be ever ready to welcome them to our homes, our offices, our counsels, and beget for them a consciousness of their own superior worth, listen to their report of cases, draw them out upon the various pathological views that they have studied out. Lend them your own views; make them important suggestions; little by little, line by line, draw out their confidence; strain them to you yet closer; let them feel, when they meet you, that your life and theirs is one, blending together for great work in alleviating pain and distress; be not unmindful of their bashfulness, their timidity, remembering that your years of service in the great profession which they have entered upon, causes them to look upon you as a superior being, around whom a certain cloud of mystery hangs. Remembering, too, that they are fresh from the fields of pathology, and can often give you new points, freshen up your own knowledge, and when meeting them in consultation, let them feel that you are indeed a friend in need; come to their aid in your own delicate way, not ignoring their work, but praise it, gently advising where they, by lack of experience, have failed, smoothing it all so nicely that, when the

consultation is over, they feel refreshed, relient, not cowed or overshadowed, but strengthened.

Often has it occurred to me how beautiful the blending of mutual interests would be, if we treated each other, and especially our younger brothers, as a preceptor treats his student. What a beautiful lesson we learn then. How confiding the interest; how lovely the trust and confidence. That same fatherly interest could and should be bestowed upon the younger members as we come in contact with them. We should be always ready to extend the cordial greeting, forgetful of any laurels that may have clustered around our own lives, and willing and ready to share their trials, for nothing can be more comforting to a young physician, who is manfully fighting against the insidiousness of diseases that creep in, even amidst the gayest throng. Be ever ready to assist them with cheerful council, remembering your own pathway was once over the same rough, tempestuous road. Your wisdom, your fraternal interest will be gladly welcomed, and remain, in all the coming years, an oasis in the life of the young man that he will ever look back to with pleasant reflections, happy thoughts, and ever serve as a beacon light to stimulate him in his dire distress.

Who of you have not welcomed the sage counselor who has gone to you, and aided you in the fight for life against death. Remember your own dependence; how, in the past, you welcomed, yea, treasured, words of encouragement. Most of you are yet in the zest and spring of your glorious manhood, and you keep up that interest in life, grow not weary of yourself or the profession, get not tired of the old boat that you have sailed in so long, but keep on with zeal, and each day try to find out, somehow, in the great army of young doctors, some poor, struggling fellow, and teach him that a doctor is also a humanitarian, and your effort will be rewarded, for you will find in his bosom a well springing up of renewed life and greater interest. The great Dr. Brooks has well said: "If all the world were rich, we would not be emancipated from the duty and the

privilege of serving one another." Look back over your past, and compare it with the glorious present; see, think how much of the moral degradation, cruelty and hardness of heart have passed away. From it we can promise a hopeful forecast of which we may make the future.

The organization of the medical profession into societies plays a wonderful part. Our work and organization is not done secretly, but quietly, and is a great brotherhood, which should include every gentleman in the profession. We should remember that purity and love will still carry forward our good work, and bear greater fruit than it has in the past. Now, my idea is, that we should redouble our efforts as an association, and place it on the highest plane, and claim a share of that glory that is coming to all orders and associations, and have that love and peace among ourselves, which will give promise to them that follow, of a brighter dawn of good to each other. We do much earnest, hard work without hope or expectancy of reward; why not, then, cultivate this brotherly love in our profession, and let the knowledge of it be recompense for performing our duty well and faithfully? If this sympathetic cord can be continued, nurtured and fostered, great changes will be brought about, and continue so long as time shall last, and the many and varied beautitudes resulting therefrom will abundantly repay us in the richness of our thoughts and feelings as we linger on in our daily work in the profession.

Soon we will leave these festive halls where we have enjoyed ourselves so much. These joys will soon be remembered with our past life. Let us learn from them that life has its sunshine and its shadows, its days and its nights, its hours of joy and its hours of sorrow. In this great life everyone has a part, a duty to himself, his family and his fellowman. When the darkness of despair comes to a fellow physician, your duty is to comfort and to console, and, if possible, to point out, through the gloom of sorrow's night, the stars that shine beyond. To share and have part in the sorrows of our friends

broadens the vision, tempers the heart, and makes golden the light that falls upon the hearthstone where he with loved ones dwell. Be, then, the star of sympathy and love from which, across the path of those to whom life seems a never ending night, shall come bright beams of hope. Let words of counsel and of cheer, set to music of fraternal love, fall from your lips, giving a glow to the cheek and a sparkle to the eye and hope to the heart of him who hears.

NECROLOGICAL REPORT,

WITH

LIST OF DECEASED MEMBERS

OF

THE TEXAS STATE MEDICAL ASSOCIATION

AND

AUXILIARY ASSOCIATIONS IN AFFILIATION,

ALSO,

LIST OF OFFICERS.

Obituary.

DR. M. S. CROWE.

By request it becomes my painful duty to announce the death of Dr. M. S. Crow, of Stephensville, Texas, which occurred last November. Dr. Crow needs no eulogy at my hands. It is sufficient to say that in every walk of life—as physician, private citizen or friend—he was a model, and while he had amassed a small fortune, he was plain, unassuming and modest to a fault. As a physician, he ranked with the foremost of the state. His zeal and interest in his profession never waned, and I can truly say that Dr. Crow left for us an example worthy the imitation of every physician in the land.

C. F. PAINE, M. D.

DR. ASA WILLIE POPE,

Of Marshall, Harrison County, was born in Washington, Ga., February 17, 1858, and died at his home in Marshall November 3, 1892. He received his literary education in the Marshall, Texas, High School, and Roanoke College, Virginia, where he graduated with third honors with the class of 1877. His medical education was obtained at the Medical Department of the University of Virginia and Tulane University, New Orleans, where he graduated in 1881. He located in Marshall, Texas, where he practiced his chosen profession until his death. "A sweeter and a nobler gentleman this world can not again afford."

C. A. SMITH, M. D.

DR. E. J. WARD.

I first met Dr. Ward in 1887, and at once recognized myself to be in the presence of a man of refined sensibilities and supe-

rior intelligence. He was truly in all respects a remarkable man. Born in obscurity, the son of an humble gardener in the District of Columbia, he was denied the opportunities for knowledge afforded the affluent, and with no tutor except a common Irish laborer of the garden, he pursued his studies until before maturity his education was more than liberal. As an absolute fact, it was stated to me that the first time he appeared before an organized class in school it was for the purpose of delivering a lecture on chemistry, an intricate knowledge of which had been obtained in a crude laboratory of his own provision. Pursuing his studies unremittingly, in time he mastered the languages and the classics, and obtained a superior knowledge of all the sciences. Electricity was no exception, and the microscope did his bidding. He received the degree of A. M. by compliment from a college he had never attended.

By reference to the medical and surgical history of the civil war, will be found photographical illustrations of his microscopical work. At the time of their preparation, Dr. Ward was the assistant of Dr. Woodward, and did the practical work, for which, though acknowledged in a quasi way by Dr. Woodward, he has never received due credit.

An intimate association with Dr. Ward taught me to regard him the most thoroughly qualified man in all the branches with whom it has been my fortune to meet. His knowledge of anatomy was as minute as though he thought of nothing else, while his information upon the subjects of physiology, chemistry, materia medica and surgery was not less perfect. When asked how his knowledge came, he modestly replied: "I have labored always."

No more brilliant star has shone amid the galaxy of the Texas medical profession or her men of science, and whatever failures he experienced in the matter of attaining superior social and financial positions, had for their cause every other before lack of merit or incompetency. If he was not always successful, it was not because he did not strive. If he was not universally admired, it was because he was not well known.

He was the friend of all humanity, and no aid that he could give, whether of professional, financial or personal character, was ever withheld in the presence of necessity. His ethical relations with gentlemen and physicians were faultless, and no child could be more gentle. He passed quietly among his fellow men, doing good and making happier those he knew. His death came as a silent messenger, calling away one of our most honorable men and a well beloved brother.

DR. J. E. ROACH.

On the 9th of April, 1893, Dr. J. E. Roach, of Sipe Springs, died. The writer looked among his neighbors for a true estimate of the man. "Dr. Roach was always considered a very good business man, free hearted, and was at all times ready to assist in any business enterprise," was the estimate placed on him by one who knew him well and who had been in his employ. We can say of him, he was an educated, intelligent citizen of business ability; he had a noble, good heart; he had a large, generous view of affairs; he was interested in the well being and prosperity of his neighbors and fellow citizens. Add to this, what would naturally follow in the life animated by a "free heart," as a friend expressed it, he was a member in one of God's assemblies, struggling in the noblest of all callings for the betterment of his own heart and the final safety and happiness of neighbors and friends. The young wife, the little children, the relatives, friends and associates have occasion to rejoice that this young life—27 years, 6 months and 17 days—a full measure of usefulness had been meted out, as it falls to the lot of few men to carry in so brief a time. The verdict of his neighbors is: "He was well liked by the people." What more can the heart desire than this epitaph: He was loved by his people and his God.

DR. C. C. FRANCIS.

Whereas, in the providence of an all-wise God he has seen fit to remove from among us our worthy president, Dr. C. C. Francis; and

Whereas, in the death of our esteemed contemporary, Dr. Francis, we lose a most worthy president and co-worker in the practice of medicine, a man of unquestioned ability, a gentleman in every particular, and an honored member of this society as well as the State Medical Association; therefore, be it

Resolved, that we tender to the bereaved family our condolence, and extend our sympaty to them in this their sad bereavement, and may God, in his eternal fitness of things, so guide and direct each and all of his family that they may meet him in the eternal city above.

Resolved, that these resolutions be spread upon the records of this society, also a copy sent to each of the city papers and a copy to his family.

Resolved, that the secretary of this medical society be requested to send a copy of these resolutions to the secretary of the State Medical Association.

W. P. ALEXANDER, M. D.
JAS. D. OSBORN, M. D.
J. M. TOWNS, M. D.
J. L. WAGLEY, M. D.
T. C. OSBORN, M. D.
S. A. GREENWELL, M. D.
GEO. B. COLBY, M. D.
T. J. WAGLEY, M. D.
J. J. WILLIAMSON, M. D.

In Memoriam.

Dr. W. J. Burt, Austin, Texas, died July 10, 1886.
Dr. H. W. Moore, Fort Worth, Texas, died September 26, 1886.
Dr. G. K. McGregor, Waco, Texas, died May 12, 1884.
Dr. J. T. Meek, Ennis, Texas, died November 11, 1886.
Dr. James Haley, Moffatt, Texas, died February 20, 1887.
Dr. J. S. Willis, Waco, Texas, died July 6, 1887.
Dr. A. Welch, ———, died September 22, 1886.
Dr. J. T. Howze, Huntsville, Texas, died August 13, 1888.
Dr. Z. W. Baker, Temple, Texas, died December 13, 1888.
Dr. A. C. White, Cuero, Texas, died December —, 1888.
Dr. F. A. Tompkins, Sandy Point, Texas, died July 26, 1888.
Dr. J. M. Ross, Brenham, Texas, died February 10, 1889.
Dr. Y. D. Harrington, Terrell, Texas, died June 9, 1889.
Dr. H. P. Downman.
Dr. J. L. Felder, Jr., Pittsburg, Texas.
Dr. W. H. Hardison, Fort Worth, Texas.
Dr. W. D. Kelley, Galveston, Texas.
Dr. Ed. Randall, Galveston, Texas, died November 13, 1889.
Dr. A. R. Kilpatrick, Navasota, Texas, died September 19, 1887.
Dr. Ashbel Smith, Cedar Bayou, Texas, died January 21, 1886.
Dr. S. F. Starley, Tyler, Texas, died December 19, 1887.
Dr. J. M. Lewis, Mexia, Texas.
Dr. S. T. Lowry, San Antonio, Texas, died June 30, 1890.
Dr. W. H. Park, Tyler, Texas, died November 4, 1885.
Dr. J. B. Robertson, Goliad, Texas.
Dr. W. L. Rogers, Galveston, Texas, died April —, 1887.
Dr. R. B. White, Ennis, Texas.
Dr. J. H. Martin, Dallas, Texas, died July 18, 1887.
Dr. E. J. Carothers, San Antonio, Texas.

Dr. A. E. Carothers, San Antonio, Texas.
Dr. G. W. Tucker, Comanche, Texas.
Dr. S. A. Towsey, Galveston, Texas.
Dr. Etiene Mellou, Brownsville, Texas.
Dr. W. E. Saunders, Sherman, Texas.
Dr. Hilary Ryan.
Dr. W. A. East, Hallettsville, Texas, died December 9, 1885.
Dr. L. J. Cabell, Charlotteville, Va. [Honorary.]
Dr. Willis Westmoreland, Atlanta, Ga. [Honorary.]
Dr. J. H. T. King, Laredo, Texas.
Dr. S. H. Smith, Dallas, Texas.
Dr. A. A. Terhune, Jefferson, Texas.
Dr. L. J. Grayham, Henderson, Texas, died April 15, 1891.
Dr. F. T. Paine, Comanche, Texas, died April 16, 1891.
Dr. G. W. Kerr, Waelder, Texas, died April —, 1891.
Dr. T. S. Burke, Corpus Christi, Texas, died September 21, 1891.
Dr. W. T. Strain, Wills Point, Texas, died November 1, 1891.
Dr. W. W. Reeves, Austin, Texas, killed December 29, 1891.
Dr. T. M. Stone, Jasper, Texas, died January 18, 1892.
Dr. E. J. Ward, Waxahachie, Texas, died December 17, 1893.
Dr. E. G. Nicholson, Del Rio, Texas, died February 3, 1893.
Dr. M. S. Crow, Stephensville, Texas, died May 3, 1892.
Dr. C. C. Francis, Cleburne, Texas, died November 16, 1892.
Dr. A. W. Pope, Marshall, Texas, died November 3, 1892.
Dr. A. D. Burroughs, Houston, Texas.
Dr. J. E. Roach, Sipe Springs, Texas, died April 10, 1893.

The above list is all the secretary, unaided, has been able to prepare. Members in possession of facts regarding the death of any of the above, or of members not mentioned, date of death, nativity, when joined the association, etc., will confer a favor on the secretary by communicating with him, and will also render a service to the association.—[EDITOR.

AUXILIARY ASSOCIATIONS IN AFFILIATION.

Austin District Medical Society.
Bell County Medical Society.
Bosque County Medical Association.
Brownsville and Matamoras Medical Association.
Central Texas Medical Association (Waco).
Collin County Medical Society.
Dallas County Medical Association.
Ellis County Medical Association.
East Line Medical Association.
Fayette County Medical Association.
Fort Worth and Tarrant County Medical Association.
Galveston County Medical Association.
Grayson County Medical Association.
Hill County Medical Association.
Johnson County Medical Association.
Kaufman County Medical Association.
Leon County Medical Association.
Llano County Medical Society.
Long Medical Association (Bastrop County).
North Texas Medical Association.
Rockwall and S. E. Collin County Medical Association.
San Antonio Medical and Surgical Society.
Smith County Medical Society.
Travis County Medical Association.
Terrell Medical Association.
Val Verde Medical Society.
Washington County Medical Association.
Waco Medical Association.
Western Texas Medical Association (San Antonio).

OFFICERS OF THE TEXAS STATE MEDICAL
HOUSTON, TEXAS,

No. of Session	Date of Meeting	Place of Meeting	Presidents	First Vice Presidents
1	June, 1869	Houston	T. J. Heard.....	R. H. Jones.....
2	June, 1870	Houston	R. H. Jones.....	R. W. Lindsay....
3	June, 1871	Houston	D. R. Wallace	L. Hudspeth.....
4	June, 1872	Houston	R. T. Flewellen...	J. A. McQueen ...
5	April, 1873	Waco	D. F. Stuart	H. W. Brown.....
6	April, 1874	Dallas.....	A. G. Clopton	T. D. Wooten.....
7	April, 1875	Austin	H. W. Brown.....	L. R. Mayfield....
8	April, 1876	Marshall	R. H. Harrison ...	John H. Pope.....
9	April, 1877	Galveston....	W. D. Kelley.....	Geo. Cupples.....
10	April, 1878	San Antonio .	Geo. Cupples.....	R. W. White.....
11	April, 1879	Sherman.....	John H. Pope.....	S. F. Matchett....
12	April, 1880	Brenham.....	A. R. Kilpatrick..	R. M. Swearingen
13	April, 1881	Waco	Ashbel Smith.....	S. F. Starley.....
14	April, 1882	Fort Worth ..	S. F. Starley.....	W. P. Burts.....
15	April, 1883	Tyler	A. P. Brown.....	T. H. Nott.....
16	April, 1884	Belton	H. C. Ghent	E. P. Becton.....
17	April, 1885	Houston	E. P. Becton.....	R. Rutherford....
18	April, 1886	Dallas.....	T. H. Nott.....	R. H. Chilton.....
19	April, 1887	Austin	S. R. Burroughs ..	R. T. Knox .....
20	April, 1888	Galveston....	J. F. Y. Paine	H. K. Leake.....
21	April, 1889	San Antonio .	R. M. Swearingen	A. Sims.....
22	April, 1890	Fort Worth ..	W. P. Burts.....	J. C. J. King.....
23	April, 1891	Waco	W. H. Wilkes.....	P. C. Coleman....
24	April, 1892	Tyler	J. D. Osborn.....	T. J. Bell .....
25	May, 1893	Galveston....	J. H. Sears	C. M. Rosser .....

* Died July, 1886, and F. E. Daniel was appointed till next meeting.

ASSOCIATION SINCE ITS ORGANIZATION AT JUNE 15, 1869.

Second Vice Presidents	Third Vice Presidents	Secretaries	Treasurers
D. R. Wallace.....	.....	A. Connell ...	F. Hassenberg
W. J. Locke.....	.....	A. Connell ...	W. P. Riddell
J. T. Norris	.....	A. Connell ...	W. P. Riddell
D. F. Stuart.....	.....	A. Connell ...	J. Larendon
J. M. Morrison....	.....	S. O. Young..	J. Larendon
M. H. Oliver	.....	W. A. East...	J. Larendon
M. A. Taylor.....	R. H. Harrison ...	W. A. East...	J. Larendon
T. W. Wiley.....	W. H. Park.....	W. A. East...	J. Larendon
R. M. Swearingen.	J. H. Sears	W. A. East...	J. Larendon
W. E. Saunders ...	J. T. Field	W. A. East...	J. Larendon
S. F. Starley	S. Eagan	W. A. East...	J. Larendon
E. J. Beall.....	O. H. Seeds.....	R. H. L. Bibb	J. Larendon
J. W. McLaughlin.	J. A. Summers ...	R. H. L. Bibb	J. Larendon
W. A. Adams	Joe S. Willis.....	W. J. Burt ...	J. Larendon
J. D. Osborn	Frank Allen	W. J. Burt ...	J. Larendon
H. H. Darr.....	M. Matkin.....	W. J. Burt ...	J. Larendon
John C. Jones.....	S. R. Burroughs ..	W. J. Burt ...	J. Larendon
J. C. Loggins.....	H. L. Parsons.....	W. J. Burt* ..	J. Larendon
A. M. Douglass....	A. A. Terhune....	F. E. Daniel..	J. Larendon
A. V. Doak.....	O. Eastland.....	F. E. Daniel..	J. Larendon
B. F. Kingsley	I. E. Clarke	F. E. Daniel..	J. Larendon
M. D. Knox	W. W. Reeves....	F. E. Daniel..	J. Larendon
W. L. Rogers.....	B. H. Vaughan ...	H. A. West...	J. Larendon
F. W. Pitts, Jr	T. J. Bennett	H. A. West...	J. Larendon
E. M. Rabb.....	W. A. Watkins ...	H. A. West...	J. Larendon

INDEX.

A

PAGE

ACNE—Paper by F. E. Daniel, M. D..... 409–417

ACTION AND USES OF PENTAL—Paper by David Cerna, M. D.. 113–132

AMBLYOPIA—Notes on Treatment of from Tobacco—B. A. Pope, M. D..... 385–386

ARMSTRONG, DR. V. P.—Discussion on Sewage Disposal..... 312

ASHTON, DR. L.—Remarks on Treatment of Pneumonia..... 165

ASSOCIATION OF DISEASES AND MORBID PROCESSES—Paper by H. A. West, M. D..... 84–95

B

BELL, DR. T. W.—Remarks on Treatment of Pneumonia..... 164

BLAILOCK, DR. W. R.—
Bone Excision in the Forearm 276-278
Discussion of Sewage Disposal..... 311-312

BRITTAIN, DR. B. F.—
Paper on Continued Fevers of Texas Classified..... 132-138
Remarks on Dressing Umbilical Cord 196-197
Remarks on Treatment of Hæmorrhoids 248
Remarks on Sewage Disposal..... 312

BURROUGHS, DR. J. J.—Discussion of Sewage Disposal..... 312

C

CANCER OF STOMACH—Generalization of—Allen J. Smith, M. D. 166–179

CERNA, DR. DAVID—
Paper on Action and Uses of Pental..... 113–132
Discussion on Reconversion of Peptone into Albumen..... 153–154
Discussion on Pneumonitis..... 162–163

CHILTON, DR. R. H.—
Remarks on Neurosis of the Eye in Relation to Stricture of the Urethra 383
Remarks on Dislocation of Crystaline Lens..... 395
Paper on Treatment of Squint..... 396–399

PAGE

CHRISTIAN, DR. G. W.—
Remarks on Diagnosis of Diptheria 196
Remarks on Sewage Disposal 312
Remarks on revision of constitution and by-laws 53
Remarks on Pneumonia 163

CLARK, DR. I. E.—
Remarks on revision of constitution and by-laws 53
Report of Ten Cases of Membranous Croup 155–157
Report of a Case of Incised Wound of Abdomen 279–280

CLOPTON, DR. A. G.—Motion on revision of constitution and by-laws 53

COLEMAN, DR. P. C.—Paper on Treatment of Depressed Fracture of the Skull 249–253

COLLECTION OF VITAL STATISTICS—Recommended by President Osborn 41

COMMITTEE, NOMINATING—
Organized 67
Report of 69

COMMITTEE OF ARRANGEMENTS—Report of H. A. West, M. D., chairman 39

COMMITTEE ON PRESIDENT'S ADDRESS—Report of 65

COMMITTEES—
On Secretary's report, action of 50
On constitution and by-laws, report of 50–58
Auditing Treasurer's account, report of 58

CONSTITUTION AND BY-LAWS 13–48

CONTINUED FEVERS OF TEXAS CLASSIFED—Paper by B. F. Brittain, M. D 133–138

COOKE, DR. H. P.—Paper on Influence of Development in Diseases 216–228

COUNCIL, JUDICIAL—
Vacancies filled 48
Organized and elected officers 48
Reports recommending election of members 49, 59, 61, 63
Report of expulsion of J. R. Briggs 60
Report regarding West Texas Medical Association and Dr. James Kennedy 63–74
Report recommending admission and election of Dr. J. M. Litten as an honorary member 67

PAGE

CRYSTALINE LENS, DISLOCATION OF—R. C. Hodges, M. D.... 390–395

CUMMINGS, DR. J.—Paper on Laparotomy for Tubal and Ovarian Diseases..... 335–339

CUNNINGHAM, DR. W. M.—Paper on Cervical or Corporeal Endometritis..... 340–349

CUNNINGHAM, DR. SAM—
Remarks on Treatment of Pneumonia..... 165
Eclampsia, Observations on..... 205–212

D

DENTON, DR. A. N.—Remarks on Treatment of Pneumonia... 164

DEPRESSED FRACTURES OF THE SKULL, TREATMENT OF—P. C. Coleman, M. D..... 240-253

DEVELOPMENT, INFLUENCE OF, IN DISEASE—H. P. Cooke, M. D 216-228

DERMATOLOGY, REPORT OF SECTION ON—R. W. Knox, M. D... 401-408

E

ECLAMPSIA, OBSERVATIONS ON—Sam Cunningham, M. D..... 205-212

ECLAMPSIA, PUERPERAL—C. F. Paine, M. D..... 213-215

ENDOMETRITIS, CERVICAL OR CORPOREAL—W. M. Cunningham, M. D..... 340-349

ENDOMETRITIS, CHRONIC, CAUSES AND TREATMENT OF—J. F. Y. Paine, M. D..... 313-330

EYE, NEUROSES OF, DUE TO STRICTURE OF URETHRA—John V. Spring, M. D..... 370-383

F

FOREARM, BONE EXCISION IN—W. R. Blailock, M. D..... 341-334

FOURCHETTE, PATHOLOGY OF—B. E. Hadra, M. D..... 331-334

FULTON, HON. R. L—Address of Welcome..... 37

G

GANGRENE, MOIST—Report of a case by J. W. Osborn, M. D.. 281-284

GARDNER, DR. A. B.—Report of Chairman on Surgery..... 229-236

GWIN, DR. CHAS. L.—
Motion regarding election of officers..... 56-57

PAGE

GYNECOLOGY, SECTION ON—
Called 68
Report of 313-330

GYNECOLOGY, PREVENTIVE—Paper by M. M. Scott, M. D 350-357

H

HADRA, DR. B. E.—
Remarks on Whitehead's Operation for Hæmorrhoids 247-248
Pathology of the Fourchette—Paper 331-334
Remarks on Brain Surgery 254-255

HÆMORRHOIDS, A MODIFIED WHITEHEAD'S OPERATION FOR—
A. F. Sampson, M. D 244-246

HÆMORRHOIDS, WHITEHEAD'S OPERATION FOR—J. E. Thompson, M. D 237-244

HALL, Dr. GEO. P.—
Paper on Insufficiency of Ocular Muscles—Report of chairman 373-378
Remarks on Neuroses of the Eye in Relation to Urethral Stricture 384
Remarks on Treatment of Squint 400

HILGARTNER, DR. H. L.—
Paper on Thiersch's Skin Grafts for Pterygia 389
Remarks on Treatment of Squint 400

HODGES, DR. R. C.—
Remarks on Ocular Insufficiency 378
Remarks on Neuroses of the Eye 383
Remarks on Skin Grafts for Pterygia 389
Paper on Dislocation of Crystaline Lens 390-395

HYPNOTISM—Matthew M. Smith, M. D 291 303

K

KEILER, DR. WM.—
Remarks on Dressing Umbilical Cord 196
Pelvic Peritonitis and Cellulitis—Paper 360-376

KENNEDY, DR. JAS.—
Action of Judicial Council 63-64
Resolutions of thanks 74-75
Paper on Reconversion of Peptone into Albumen 146-152
Remarks on Whitehead's Operation for Hæmorrhoids 247

PAGE

KINGSLEY, DR. B. F.—Report of Fatal Case of Tubal Pregnancy 358-359

KNOX, DR. R. W.—
Discussion on Pneumonitis 163
Report, Section on Dermatology 401 408

L

LAPAROTOMY FOR TUBAL AND OVARIAN DISEASE—Paper, by J. Cummings, M. D 335-339

LEE, DR. GEO. H.—
Address of Welcome 37-39
Paper on Treatment of Tetanus 256-265

LITTEN, DR. J. M.—Resignation offered and received. Election as an honorary member 67

LOGGINS, DR. J. C.—Report of Chairman of Section on General Medicine 79-83

M

MCLAUGHLIN, DR. J. W.—Remarks on Treatment of Pneumonia 154

MEDICINE—General—Section called 48

MEMBERS—
List of new, 1893 19
List of honorary 21
List of ordinary 23-32
Qualification of, discussion on 54-55

MEMBRANOUS CROUP—Report of ten cases, I. E. Clark, M. D .. 155-157

MEMORIAL SERVICES 64

MINUTES—
First day 37-50
Second day 50-62
Third day 62-75
May 2-5, 1893 37-75

MOSS, DR. R. E.—Remarks on Treatment of Squint 399

O

O'BARR, DR. J. T.—Discusses Classification of Fevers in Texas 139

OBSTETRICS AND DISEASES OF CHILDREN—Section on, called .. 60

PAGE

OCULAR MUSCLES, INSUFFICIENCY OF—Geo. P. Hall, M. D..... 373-378

OFFICERS—
List of, 1893-4..... 9-11
Introduction of newly elected..... 72-73

ORATOR—Annual election of—Recommended by President Osborn..... 43

OSBORN, DR. J. D.—
President's annual message..... 40-44
Paper, Moist Gangrene—Report of a case..... 281-285
President's annual address..... 419-428

P

PAINE, DR. C. F.—
Notes on Treatment of Pneumonitis..... 158-162
Remarks in reply..... 165
Remarks on Hæmorrhoids..... 248
Eclampsia, Puerperal, paper on..... 213-215

PAINE, DR. J. F. Y.—
Remarks on Treatment of Placenta Prævia..... 201-204
Report of a Case of Splenectomy..... 286-289
Report of Section on Gynecology..... 313-330

PAPERS—
Publication of previously to appearance in Transactions, discussion on..... 58-59
Motion to reconsider allowing previous publication of..... 68-69

PENTAL, ACTIONS AND USES OF—Paper by David Cerna, M. D. 113-132

PERITONITIS, PELVIC AND CELLULITIS—Wm. Keiller, M. D... 360-372

PLACENTA PRÆVIA, HOW TO TREAT IT—Q. C. Smith, M. D.... 198-201

PNEUMONITIS—Notes on Treatment of—C. F. Paine, M. D..... 158-162

POPE, DR. IRVIN—
Discusses Catarrhal Fever..... 139
Report of Section on Obstetrics and Diseases of Children.... 181-196

POPE, DR. B. A.—
Notes on Treatment of Tobacco Amblyopia..... 385-386
Remarks on Dislocation of Crystaline Lens..... 395

PRICE, DR. J. S.—Discussion on Pneumonitis..... 162

PTERYGIA, THIERSCH'S SKIN GRAFTS FOR—H. L. Hilgartner, M. D..... 388-389

R

PAGE

RECONVERSION OF PEPTONE INTO ALBUMEN—Paper—Jas. Kennedy, M. D..... 146-152

ROSSER, DR. C. M.—
Remarks on revision of constitution and by-laws..... 53
Paper—Practical Methods of Sewage Disposal..... 305-311
Conducts memorial services in absence of the chairman.... 64-65
Reads memorial notice of Dr. E. J. Ward 64

S

SAMPSON, DR. A. F.—Modified Whitehead's Operation for Hæmorrhoids 244-246

SCHOLARSHIPS' PRIZE—Recommended by President Osborn.. 40-41

SCHOTT, J. J.—Invitation to members..... 40-50

SCOTT, DR. W. M.—Paper—Preventive Gynecology..... 350-357

SEARS, DR. J. H.—
Remarks in favor of his report upon revision of constitution and by-laws..... 52-53
Discusses typhoid fever 139-140
Remarks on Diagnosis of Diptheria..... 196

SECRETARY'S ANNUAL REPORT..... 40-41

SECTION ON OBSTETRICS AND DISEASES OF CHILDREN—Report of Chairman, Dr. Irvin Pope..... 181-196

SEWAGE DISPOSAL—Practical Methods of—C. M. Rosser, M. D 305-312

SHEARER, DR. T. W.—
Report of Twelve Cases of Typhoid Fever..... 141-145
Remarks on Pneumonia..... 164

SMITH, DR. ALLEN J.—
Remarks on revision of constitution and by-laws 54
Paper—Generalization of Cancer of stomach..... 166-179
Discusses Association of Diseases and Morbid Processes.... 95-96

SMITH, DR. MATTHEW M.—Paper on Hypnotism..... 291-303

SMITH, DR. Q. C.—Placenta Prævia—How to Treat it..... 198-201

SPINAL CONCUSSION—Paper—C. H. Wilkinson, M. D..... 97-111

SPLENECTOMY—Report of a Case—J. F. Y. Paine, M. D..... 286-289

PAGE

SPRING, DR. JOHN V.—
Paper—Neuroses of the Eye, due to Stricture of the Urethra 279-383
Remarks on Dislocation of Crystaline Lens 395

SQUINT—Treatment of—R. H. Chilton, M. D 396-399

SURGERY—
Section on called 62
Report of Chairman, Dr. A. B. Gardner, on 229-236

T

TERRELL MEDICAL SOCIETY—Telegram greetings 50

TETANUS—Treatment of—Geo. H. Lee, M. D 256-265

THOMPSON, DR. J. E.—
Whitehead's Operation for Hæmorrhoids 237-244
Operative Treatment for Perforation in Typhoid Fever 266-275

TRANSACTIONS, 1892—Cost of 45

TREASURER'S ANNUAL REPORT 47

TUBAL PREGNANCY—Fatal Case of—B. F. Kingsley, M. D 358-358

TUCKER, DR. J. P.—Offers resolution 71

TYPHOID FEVER—
Report of Twelve Cases—T. W. Shearer, M. D 141-145
Operative Treatment for Perforation—J. E. Thompson, M. D. 266-275

W

WEST, DR. H. A.—
Makes report of committee of arrangements, and introduces President Osborn 38
Secretary's Annual Report 44-46
Remarks in favor of his report upon revision of constitution and by-laws 51-52
Paper—Association of Diseases and Morbid Processes 84-95
Discusses Classification of Fevers in Texas 138-139

WEST TEXAS MEDICAL ASSOCIATION—Action of Judicial Council 63-64

WILKINSON, DR. C. H.—Paper—Spinal Concussion 97-111

WOUND, INCISED OF ABDOMEN—Report of a Case—S. E. Clark, M. D 279-280

Y

YOUNG, DR. S. O.—Elected as honorary member 61